THE IRON AGE

THURSDAY, MARCH 30, 1893.

Wages in Belgium.

The Department of Labor and Industries of the Belgian Government has lately instituted an inquiry into the matter of workmen's wages at the present time as compared with those paid in similar trades in 1846, the period in which information was last collected on the same subject. The results obtained are thus briefly summarized in *Le Génie Civil:* In the year 1891, when the statistics were compiled, 3188 cases were examined. These were taken from a wide range of industries, and give a sufficiently exact idea of the present conditions of labor in the miniature kingdom of Belgium. The result of the inquiry proves that wages have risen generally during the past 45 years, while the cost of living has, if anything, decreased. The mason, for example, who earned 34 cents a day in 1846, now earns 80 cents. The gain of blacksmiths is still larger, their present pay being 90 cents, as against 35 cents in 1846. The wages of tanners have risen from 33 cents to 82 cents, and of watchmakers from 44 cents to $1.20. Among numerous workmen's "budgets" rendered, the greater number show a monthly income of more than $40. That of printers exceeds $56; a weaver and his two lads of fourteen can count on $40 a month each, and a miner or a puddler on $49, while glass workers easily command $60 monthly. On the other hand, the price of wheat since 1870 has gone down 36 per cent.; potatoes, 14 per cent.; coffee and sugar, 36 per cent.; cotton fabrics of all kinds, more than 55 per cent.; those of wool, 45 per cent., and cloth, 25 per cent.; showing that the purchasing power of money for the necessaries of life has greatly increased in the interval. Taking 100 as the purchasing power of a miner's salary in 1846 (that is to say of the quantity of goods his then wages could procure), it is found that the figure 142 would generally express their purchasing power at present.

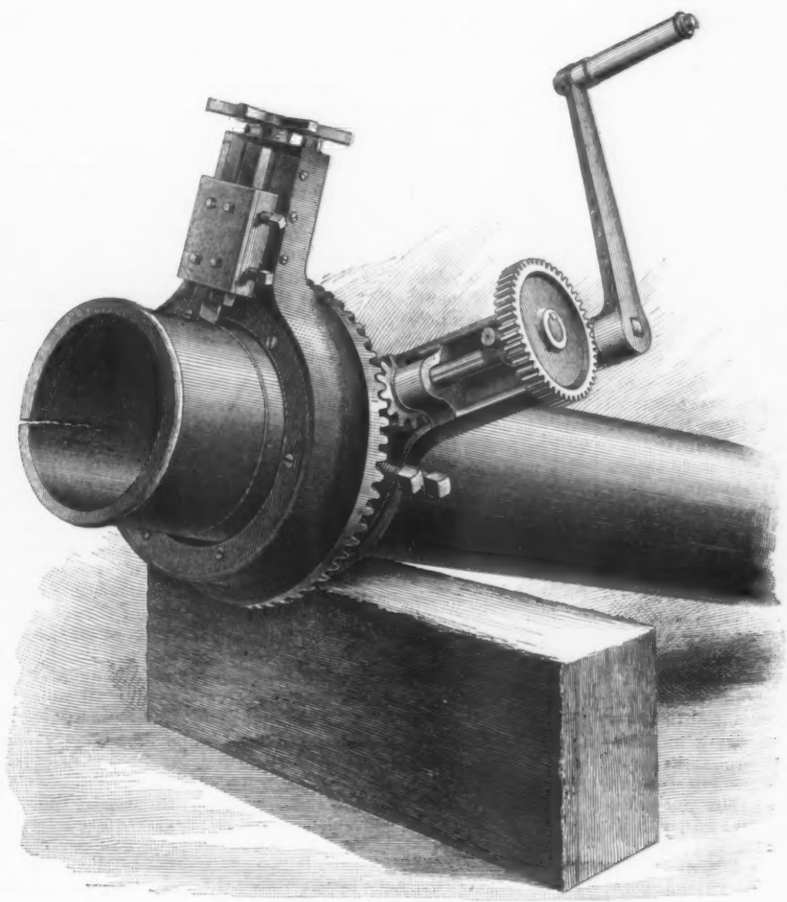
By the budgets collected it has been arrived at that the adult workman consumed 11 pounds of bread, 2½ pounds of meat, and 10¼ ounces of butter more each month in 1891 than he did in 1853. Consequently, being better nourished, he is able to accomplish more and better work than he did 40 years ago. In view of the unsatisfactory condition of the laborer in many countries to-day, it is satisfactory to contemplate statistics showing so marked an improvement in his status in Belgium; although the wages shown as now ruling in that country would hardly be considered generous in the United States.

The British Board of Trade returns for the month of February are described by the London *Times* as the worst of a series of bad returns. Both in imports and exports the values have fallen below the totals of the corresponding month of last year, owing equally to diminished quantities and lower prices. The imports are valued at £29,758,748, a decrease of 14.9 per cent; and the exports of British and Irish goods at £17,093,309, a decrease of 11.5 per cent. Only the re-exports of foreign and colonial merchandise show any increase, and that a very small one. These figures point to a serious curtailment of England's external trade.

Governor Flower has signed a bill appropriating $258,000 for canal improvement in New York. The bulk of the appropriation is for increasing the lockage capacity of the Erie Canal and for improving the Oswego, Black River and Champlain canals. A sum of $10,000 is set apart for experiments to determine whether electricity can be effectively and economically applied as a motive power on the canals.

The French Pipe-Cutting Machine.

This machine—which is the invention of D. W. French and is put on the market by Benjamin C. Smith of 52 Cliff street, New York—is intended for cutting pipe from 4 to 48 inches in diameter. The machine is very simple in design, and while light, so as to be easily handled, it possesses sufficient strength to stand severe usage. In using the machine all that is required is to mark the pipe where it is to be cut, slide the machine along to the point designated and set up the screws which hold it in position on the pipe. The machine is operated by means of the crank shown, which can stand in any position desired. One end of the pipe to be cut is raised about 1 foot, so that the rotary head carrying the cutting tool will clear the ground in passing around the pipe. A pair of light chain tongs is all that is necessary to hold the pipe, and on large sizes, where the pipe is heavy, nothing more than chocks are needed. To cut off a cracked pipe the machine is moved along to the point where the crack ceases, and not a foot behind the crack, as has been customary; by so doing the cost of a foot of pipe is saved every time a cracked pipe is cut. It is possible to cut on a bevel by simply slackening the screws on the top side of the frame and setting them up on the bottom side, and as the machine must cut square to its own axis, the required result is obtained. It is claimed that the economy of this machine is represented by the difference between the work of two men not exceeding 40 minutes each and the work of five or six men from 60 to 75 minutes each on 20 inch or 24 inch pipe, with a proportionate amount of saving on all other sizes.



THE FRENCH PIPE-CUTTING MACHINE.

The engraving shows the construction of the machine so plainly that but little explanation is needed. On the crank shaft is a pinion engaging with a gear on a shaft having, at its inner end, a beveled pinion meshing with a beveled gear formed in the periphery of the revolving head. This head is formed with suitable guides for the tool carriage, which is fed to the work by means of the hand wheel shown. It will be observed that this train of gears provides ample power to enable the tool to take a deep cut.

WORLD'S FAIR NOTES.

Hurrying the Work of Installation.

Only a month remains until the formal opening of the exposition. There is bedlam in the buildings. They roar with the mighty exertions of the workmen. The chaotic condition of the grounds is nothing when compared to the jumble of exhibits, the hurry and skurry of mechanics, the coughing and wheezing of engines and the heaps upon heaps of wood and metal to be seen and heard in the immense structures. There is no time to lose and contractors are pressing their men as captains urge their companies to carry a desperate point.

There is nothing humorous about the work. It is grim and killing. There are a thousand pavilions to be built and a hundred more to be finished before the big doors swing open to the world. Meantime trains burdened with foreign and domestic exhibits are rolling into the park from all points in the country. Huge steam cranes snort and hiss at the entrances. Even electricity is used to facilitate the handling of the ponderous exhibits of machinery. The roar is loudest in Manufactures Building, Machinery Hall, and in the great white structure where the products of the mines and their method of crushing are to be seen. The interior of the great Manufactures Building in these days of turmoil looks like the pictures of the construction of the Tower of Babel. The rumble of trucks over the floor, the roar of the carpenters of 20 nations and the cries of the men make a deafening din.

If there is to be one uncompleted building in the park, so far as pavilions and booths are concerned, it will be the mighty Manufactures, and it is here that the most frantic endeavor is being made to stretch a minute into an hour. The little Japs, working like squirrels in their queer blouses and ostrich-toed stockings, have made more progress than the rest of the exhibitors, although Germany, with an exhibit which will astound the world, is toiling with might and main to prepare its pavilion for the reception of its display. England's exhibit is pouring into the building. It is coming on every train. And side by side with it are the big boxes and crates from Austria and Belgium.

There is an immense amount of work to be done in the Manufactures Building, but the force of workmen is being increased each day. It is scarcely probable that all the exhibits consigned to the big structure will be installed by May 1, but the building, like the gates of the fair, will be opened on time and there will be enough to be seen there even on that day to bewilder and charm the eye. There is also a wild uproar in Machinery Hall. The exhibits here are for the most part so ponderous and so unwieldy that the work of placing them in their proper places is necessarily slow. Like the Manufactures Building, the display in Machinery Hall will scarcely be completed by the opening day. Electricity is being used to hoist, transfer and lower the huge engines and machines, and an army of brawny men, many of them in the strange garb of foreign countries, are hauling and tugging away at steam chests, piston rods and wheels of amazing diameter. The German exhibit in this building, as is the case in other departments, is nearly ready for the band to play. Looking down upon the piles of iron and steel and brass from the east gallery it would seem to be an impossibility to set the wheels agoing before July 1; but men work wonders at the fair these days. An immense structure has been erected in four days. Even 500 carloads of exhibits can be handled in a single day. Considering all this, and the fact that men in Machinery Hall are not only working like demons upon the floor, but are riveting and welding things while suspended in the air, there are reasons to acccept the confident assertions of contractors that the displays will be in good shape on the opening day.

Work is more advanced in the Mines Building, where the floor is strewn with exhibits and splashed with the pavilions of countries famed for their minerals. Agricutural Hall is also in good trim now that the glass broken by the heavy snows of the winter is being replaced. For a time exhibitors in this building were bothered by water falling from the roof upon the space assigned for their displays. Since the leaks were stopped work has progressed steadily, until the main floor, as well as the balcony, is thickly dotted with pavilions, many of them of the most interesting and unique character.

There has never been much concern about the Electricity and Transportation buildings. Electricians have a way of doing their work with incredible speed, and it may be confidently predicted that their display, which will be the most wonderful of its character ever seen in the world, will be a "blazing and a singing and whirring" on schedule time.

The same is also true of the Transportation Building. Most of the exhibits for this department roll on wheels, and they are rolling in all the time. The main floor is already filling up with locomotives and specially constructed trains, and upstairs men are pushing vehicles and odoriferous canoes into place. Over at the Fisheries Building, where the guards have had nothing to do for months but press their faces against the window glass and watch the skaters on the ponds, there are signs of activity. Last week the first consignment of fish was received at the building, and from this time until May 1 the slate-colored cars of the United States Fish Commission will help fill the tanks in the building with fish.

The State and Foreign buildings will be finished by May 1. Many of them are now ready for occupancy and the rest are so well under way that there can be no question as to their completion by the specified time.

Nearly 10,000 men are now at work under the direction of the construction department. By far the larger proportion of them are on the pay rolls of contractors under bond to increase their working forces any time they may be ordered to do it. Foreign countries have a thousand or more men in the park, some of them putting the finishing touches on their buildings and others unpacking and setting up exhibits.

The Manufactures' Roof.

The reports that have been published in Chicago papers of late concerning the condition of the roof of the big Manufactures Building have greatly displeased Director-General Davis and Chief Allison. Last week Chief Engineer Shankland gave out the following as an official report of the condition of the roof:

"When the snowslides of last month broke large sections of the glass in the roof orders were at once placed for a large supply of the glass required to make the necessary repairs. There has been great difficulty in getting this glass, as it had to be made, and it is only within a day or two that it has begun to arrive. The places in the roof where the glass was broken have, of course, been leaking, owing to the numerous rains and snows of the past month. There is no such thing, however, as a general inundation of the whole Manufactures Building, and any complaints that may have been made by exhibitors were probably made by those whose floor space is located under the broken space in the roof. With two or three days of fair weather now, the roof will be repaired in such manner as will stop all leaks and all complaints."

America's Adam and Eve.

Two figures cut from marble, to represent the typical American male and female forms, will make one of the most interesting features of the ethnological exhibit. They will be installed by Professor Putnam in his laboratory in the Anthropological Building.

These figures are now being completed by Harry Kitson and Miss Theo. Ruggles, both well-known sculptors and both of Boston. Theirs is the first attempt ever made to reproduce in marble the typical form of a whole people. The idea originated with Dr. D. A. Sargent, Director of the Harvard Gymnasium, who has given much time and attention to the matter, furnishing for the use of the sculptors most of the measurements. The figures are really the result of measurements carefully taken by the most approved anthropological methods of no less than 10,000 different persons, nearly all of them in bloom of youth, that is, between 18 and 25 years of age, and the great majority of them college students, 5000 Harvard undergraduates alone having been measured for the male statue. A number of measurements of students of other colleges and a few of professional athletes have been used.

There are a little less than 5000 measurements of ladies, and they are from Harvard Annex, Smith, Vassar, Wellesley and other female institutions of learning.

Ever since 1880 these measurements of Harvard men have been pilling up in the archives of the gymnasium of that institution of learning. Sixty five different measurements were taken of each individual before he was considered measured. These sixty-five measurements have been taken of every one of the 10,000 people represented in the two figures.

The measurements include the girth of head, neck, trunk, arms and legs, each in a number of different places, the length of the body and limbs, both standing and sitting, and a part of other dimensions too numerous to mention. Then the sixty-five measurements of the 10,000 people are classified and the mean obtained of each one of the sixty five. A mean, be it noted, is not at all the same as an average. The mean is, instead, the instance that is found most frequently; for instance, if more of the 5000 men are just 68 inches tall than there are of any other hight, 68 inches, the mean, is taken. By this method of calculation the extremes do not count, and the true normal type is unaffected by the freaks and eccentricities in which even mother nature at times indulges. Scarcely an individual has filled the measurements of the type in more particulars, and a great multitude, of course, have not a single one of the measurements of the typical figure.

The faces are taken from composite photographs. Some 300 faces of young men will be represented in the face of the male figure, and about as large a number in that of the female. The female face is that of a composite representing a number of separate composites from the different female colleges already enumerated. The face of the male figure, which is beardless, is a composite of Harvard men, reinforced by composites from Amherst, Bowdoin and other colleges.

The figures will be completed early next month and will be installed by Professor Putnam before the opening, May 1. Speaking of them yesterday, Professor Putnam said: "This work has been carefully done by Dr. Sargent. His measurements represent a vast amount of labor. The figures will interest the general public and will prove of great value to those who make a study of the physical development of man. This is, I think, the only method that could have been pursued to secure the

real proportions of a typical American Adam and Eve. Replicas of the figures in metal will be furnished all museums that may wish to possess them."

The Fisheries Exhibit.

Live fish are now being placed in the aquaria of the Fisheries Building. These aquaria are ten in number, and occupy the east pavilion of the building. They each have a capacity of from 7000 to 27,000 gallons, and, combined, form the greatest aquaria in the United States.

In the center of the pavilion will be a pool 30 feet in diameter. Workmen are putting the finishing touches upon this feature of the general exhibit, arranging the rockery and placing the aquatic and semi-aquatic plants. The water will be filtered so that it will be as clear as crystal. From crevices in the rocks jets will spray toward the center. And as in this pool are to be exhibited the goldfish, golden ides, golden tench, and the many colored fish from Japan, it will have the appearance of an immense aquatic kaleidoscope.

Surrounding the pool will be the aquaria proper. The tanks are so arranged that the glass portions come within range of vision at about three feet from the floor. They are in two groups; one for salt water specimens, the other for the denizens of the lakes and rivers. Each tank will contain rocks built up in ornamental designs, and specimens of plants indigenous to that section of the world represented by the fish. In this manner will be illustrated as far as possible the bottoms of the principal American rivers.

One of the largest tanks is that in which will be the exhibit from the Mississippi river. It is 70 feet long, 12 feet wide and 9 feet high. This aquarium is to contain the largest specimens of fresh water fish in the building. Specimens of catfish, shorel fish and sturgeons weighing more than 200 pounds each have been captured, and as soon as all is in readiness for their reception will be forwarded to Jackson Park. This tank occupies the eastern half of the first series of aquaria immediately surrounding the pool.

On the west side of the pool will be several large tanks, to correspond with the Mississippi aquarium, in which will be exhibited the sea fish. Then comes an aisle, and in the outside circle around the walls of the building will be rows of smaller aquariums.

Light from the outside windows shines directly through the aquaria, so that visitors in the aisles will have no difficulty in viewing the fish. The system is provided with pumps which keep the water constantly fresh. The salt water will also be made as nearly clear as possible. It will be brought from the Atlantic in tank cars, each having a capacity of 30,000 gallons. A special car has been constructed to transport the live exhibit.

This portion of the fish and fisheries exhibit is under the United States Government Fish Commission. Professor Forbes of the Illinois University at Champaign is in charge. Every noted species of curious, edible and commercial fish of the United States will be exhibited some time during the season. The Fish Commission will have in the Government Building a large display of mounted specimens, fishing apparatus and mounted aquatic plants by which certain fish find maintenance. There will also be a display of the hatcheries of the commission, showing the methods of propagation.

The inanimate collection now in the building contains life-like reproductions of many curious ocean fish, several of which are very large. In this section will also be a collection of fishing boats in use off the Atlantic coast.

Perhaps no building at the park presents in its exterior decorations a more complete story of what will be its contents than the Fish and Fisheries Building. Every column, every cornice and every capital is covered with ornaments that are life-like reproductions of familiar fish, reptiles and creatures that "inhabit the waters under the earth." The friezes over the entrance doors show groups of frogs that are evidently enjoying life as only plaster frogs can do. One pillar of the south porch is decorated with sea crabs in *bas relief;* another is ornamented with scores of plaster flounders, while others glorify lizards, terrapin and lobsters.

The Department of Fish and Fisheries, to which the Government Fish Commission exhibit is a valuable adjunct, will be divided into three classes. In the main building will be exhibited fish products and commercial elements of the fishing industry. In the east wing will be the display of live fish. The western pavilion will be devoted to collections of angling apparatus of all kinds. This exhibit will be competitive, and will include all kinds of fishing tackle and appliances in use in this and foreign countries. In fact this portion of the building will be a fisher's paradise. In it the lovers of the gentle art may assemble to swap yarns and examine the latest wrinkles intended to deceive the wary trout.

The display is intended to embody the perfect articles in use at the present day, and to illustrate for contrast as many of the ancient and barbarous methods of catching fish as possible.

Models of Hell Gate.

To New Yorkers, and in fact to all who have visited the great metropolis of the Atlantic seaboard, one of the most interesting exhibits at the fair will be a series of models illustrating the improvements in the waters in the vicinity of that city. These models are unique in design, and have been in process of construction for nearly two years under the superintendence of Lieut. Col. George L Gillespie, who is in charge of the river and harbor improvements in New York and New Jersey.

Government authorities at Washington, recognizing the general interest in civil engineering, have given the exhibits the place of honor in the Government Building. The visitor entering the Building from the western entrance facing the lagoon will see first a model of Sandy Hook. In the immediate vicinity of the Sandy Hook plan will be grouped all of the models prepared by Lieutenant-Colonel Gillespie's force now at work in New York City.

With these in the northwest corner of the building will be displayed representations of work done at the mouth of the Mississippi River; of the harbor at Key West, Fla.; of the iron pier at Lewes, Del.; of the Delaware breakwater; of the pulsometer at League Island and the stone scow at the Delaware breakwater. To afford visitors an opportunity to see these models wide aisles have been laid out surrounding them.

Orders were first issued from Washington August 8, 1891, for the construction of the models, and work has been continuous from that day to the present time. There are in all eight exhibits illustrating the work now being carried on in New York harbor. Five models show the work done by the late General John Newton in removing the Hell Gate obstructions.

One shows a section of rocks near Hallett's Point as it appeared before the first explosion in the fall of 1876, when General Newton's little daughter pushed the button and caused the mass of rocks and water to fly skyward. By turning a crank the surface is made to rise, revealing underneath it the galleries made by blasters and the headings, the short headings, with holes plugged with dynamite cartridges, the coffer dam, and the whole work as it appeared when all was ready for the blast. The topography is reproduced according to the scale of 1 inch to a mile.

Another model represents a general view of Hell Gate as it appeared before 1869, when operations were begun by the Government.

They Have Fallen by the Wayside.

One more projected enterprise on Midway Plaisance has fallen down. It was the concession granted to the Barre Sliding Railway for running trains the length of the Plaisance. The company was notified by the Council of Administration that, having failed to fulfill the terms of its contract, it would have to relinquish its place. The Barre Sliding Railway was a unique project and one that promised to distance railroad trains in the lightning swiftness of its speed. Its cars were to slide over a thin surface of water which coated the rails. These were the usual distance apart, and an elevated structure a mile long on which were the tracks had been practically completed when the company found itself unable to go ahead. The cars were to be propelled by jets of water, and a speed of 60 miles an hour was said to be merely an ordinary rate. The railway was exhibited at the last Paris Exhibition and was reputed to have been one of its wonders. The Exposition Company will buy the elevated tracks from the concessionaires, and the road will probably be used as an electric line. It will be easy to conduct it with the electric cars used by the Intramural Railway in Jackson Park. It is a mile from one end of the Plaisance to the other, and it will be necessary to afford transportation to visitors along that strip of ground.

Another enterprise which seems to have come to naught is the projected lofty tower, known as the Johnstone Tower, on the Plaisance between the Illinois Central tracks and Stony Island avenue. This tower was to be built of steel over 500 feet high, with a circular railway winding nine times around before reaching the summit. At night the tower was to have been illuminated with 10,000 incandescent lamps, which would have made it appear like a shaft of light. The Tower Company were late in beginning their work and it seemed impossible for them to build a structure such as was designed by May 1. Barring a few hundred piles now lying along on the site there are no other evidences visible of progress. A lonely pile driver is started up two or three times a week, and after pounding a few piles takes a rest for another day or so. The Tower Company have until April 1 to furnish evidence that the structure will be built. None of the officials, however, expect to see the project rise any higher than the surface of the ground.

Montana's Silver Statue Well Cast.

The silver statue of Montana's "Justice," for which Ada Rehan, the actress, was the model, has been successfully cast and is now an assured fact. The casting was done on the 18th inst. At ten o'clock on the following morning a number of those interested in the statue were on hand in the foundry of the American Bronze Company at Grand Crossing, near Chicago, where the silver had been cast into the mold, to see what was the result of the undertaking. Julius Berchern, who had charge of the work, had his assistants remove the molds. He was in a state of great trepidation and had been ever since the molten silver was poured in. He had scarcely rested during the night and could hardly retain his patience for the 22 hours necessary to allow the statue to cool. When the mold was removed it was found that the work of the founder was as near perfection as could be. It was expected that the cooling of the white metal would

leave air-holes, cracks, and flaws here or there on the statue, but not one was noticeable. The achievement is noteworthy, as the statue is of the full size of the human figure and nearly a ton of silver was used, a metal with which founders have had little or no experience in casting in large masses.

Exhibits from Ontario.

The mineral exhibit of Ontario, Canada, will consist of 1600 samples of ore from all parts of the Province, and five carloads of it were shipped from Toronto last week and one carload from the Sudbury district. This latter car contains nickel alone, and there is one solid chunk of pure or refined nickel which weighs 4600 pounds. The mineral displays altogether will exceed 100 tons in weight. One of the most artistic as well as attractive and unique displays in the Ontario court will be entirely prepared by Indians of the reserve in the counties of Brant and Haldeman. This will consist of a monument or trophy entirely made of pieces of timber comprising 13 varieties, and all of which have been prepared and fitted without the use of saw or other utensils except a jackknife. Yet the timbers are squared and molded with a perfectness that could not be excelled by the most elaborate machinery, and the pieces are polished by the hands of the Indians. Surmounting the timbers forming the base of the trophy will be five wooden columns elaborately decorated by carvings of native birds and animals, all being done with a jackknife. On the top of each column will be a small belfry, and above all a large belfry. The entire work is the result of six years of labor of two or three educated Indians. The sides of the base will be richly inlaid with various specimens of wood.

In the mineral section some delay has occurred by the necessity of strengthening the floor. One specimen of rich iron ore will weigh over 10 tons. In every department these exhibits of Ontario will be complete, and for their arrangement and care a force of more than 60 men will be continuously employed during the Fair.

Must Have Credentials.

Considerable annoyance has recently been caused in the various departments by persons claiming to represent foreign and domestic exhibitors and State commissions. In many cases the claimants have caused confusion in assigning space, and it has become difficult for the authorities to determine exactly whom they were dealing with. In order to obviate this difficulty hereafter the Director-General issued the following general order:

To all Department Chiefs.—No person will be recognized, or permitted to act as agent in the World's Columbian Exposition for an exhibitor, or for a foreign or State commission until he has filed satisfactory written evidence of his authority.

In the case of agents for domestic exhibitors, satisfactory evidence will be a formal power of attorney, which must be filed with the chief of department to which the exhibits pertain.

In the case of agents for foreign exhibitors, satisfactory evidence will be the written authority (preferably power of attorney) of the principal, which must be approved by the commissioner-in-chief of the country of which the exhibitor is a subject, and filed in the office of the Director-General.

In the case of agents for foreign and State commissions, the proper evidence will be the written authority of the head of the commission, which must be attested by the secretary of said commission and filed in the office of the Director-General.

GEORGE R. DAVIS,
Director-General.

Items.

One of the big pieces of machinery at the fair will be a 1500 horse-power combined engine and dynamo. It is to be exhibited by the General Electric Company, by whom it has been built at Schenectady, N. Y.

The boiler plant at Jackson Park is now being heated by oil. Two batteries of eight boilers have been fired for seven days with this fuel with satisfactory results. No perceptible odor is emitted and the smoke nuisance is avoided.

The claim is made that the largest wood split pulley in the world has just been shipped from Columbus, Ind. It is a part of the Reeves Pulley Company's exhibit which will be made at the World's Fair. It required two and one half kegs of nails and 100 pounds of glue to unite the 2800 pieces of wood of which it is composed. The pulley is 18 feet in diameter and has a face surface of 4 feet.

The Installation Department ran against its largest job when it began unloading the 2000 horse power Allis engine last week. It is to run the Westinghouse dynamo, or rather a pair of them, each with a capacity of 10,000 incandescent lights. One of the pieces weighed 30 tons, and when Superintendent Haley started to carry it into the building by the big traveling crane he found its capacity 10 tons short. He had to lay a double track over the floor of Machinery Hall from the railroad track to the site for the engine.

The Colorado Fuel & Iron Company.

The statement published by the Colorado Fuel & Iron Company for the quarter ending January 31, 1893, which is in reality the first quarter of their existence, is as follows:

Net earnings, fuel and iron departments		$304,078.02
Earnings from stocks and bonds		10,131.00
Total net earnings		314,209.02
Sinking fund for coal and iron ore mined	$35,488.52	
Proportion of bond interest for quarter	79,755.00	
Proportion of preferred stock dividend for quarter	40,000.00	
Proportion of funds for insurance, taxes and personal injury	16,500.00	
Total fixed charges		171,743.52
Surplus applicable to dividend on common stock		$142,465 50
Amount required for dividend on common stock at rate of 6 per cent. per annum		$138,759.00

It will be observed that these figures show that the company have been earning at the rate of 6 per cent. per annum on their common stock. Whether results will be as good during the summer months, with a lessened sale of coal for domestic purposes, remains to be seen.

The builders' trial trip of the armored cruiser "New York" took place last week. Her engines were put to the most severe tests, with remarkable results. Steaming twice over a course from the Five Fathom Bank Lightship to the Northeast End Lightship, a distance of 9.88 knots, in 12 fathoms of water, an average of 19.95 knots per hour was made under ordinary draft. A maximum speed of 20.47 knots was made in 40 fathoms of water under a forced draft of 1 inch pressure, being ½ knot more than the guaranteed speed. It was not necessary to stop the engines for any adjustment and not a journal was heated.

Instructions to customs officers concerning the collection of statistics of domestic exports to Mexico and Canada have been issued by the Treasury Department. The manifest of the owner or of his agent will be transmitted and delivered to the Collector of Customs at the last port in the United States through which such commodities pass into foreign territory, in such manner as the exporter may elect; but to obviate delay at the frontier port, it is recommended that the manifest be intrusted to the railway or transportation company, to be carried along with the goods.

Insurance Against Laboring Accidents in Germany.

It is about seven years since the German Government instituted a system of compulsory insurance for all those engaged in labor in that country. The report of the Central Insurance Bureau, which regulates the working of the entire system, has been recently presented to the Reichstag. It contains some interesting features in the tabulated results, shown for the first five years of the system, and the deductions drawn therefrom. It appears that at the end of 1890 64 workingmen's associations, organized under the insurance law, and comprising about 5,000,000 of workers, shared in grants and pensions for accidents. Of these perhaps the most important were the associations representing artisans in iron and steel and metal workers generally, which, we find, included 583,000, or 11 per cent. of the whole number of workers. When we come to consider, however, the amounts paid out for accidents, we find that this class absorbed more than 17 per cent. of the total disbursements for accidents in all classes of labor. Further, it is shown that, while the average proportion of individuals in all trades killed or injured while at work during the five years under review was 4.2 in 1000, the proportion in the metal industries was 6 in 1000. These figures clearly prove the fact that workers in metal run far greater risks than those engaged in other industries. To show how regular this proportion has been, we present the following figures for each of the five years under review:

Average of Accidents for 1000 *Individuals Insured.*

Years.	For all industries.	For metal working industries.
1886	2.83	3.64
1887	4.14	5.04
1888	4.35	5.83
1889	4.71	6.71
1890	5.34	7.44

Increased Number of Accidents.

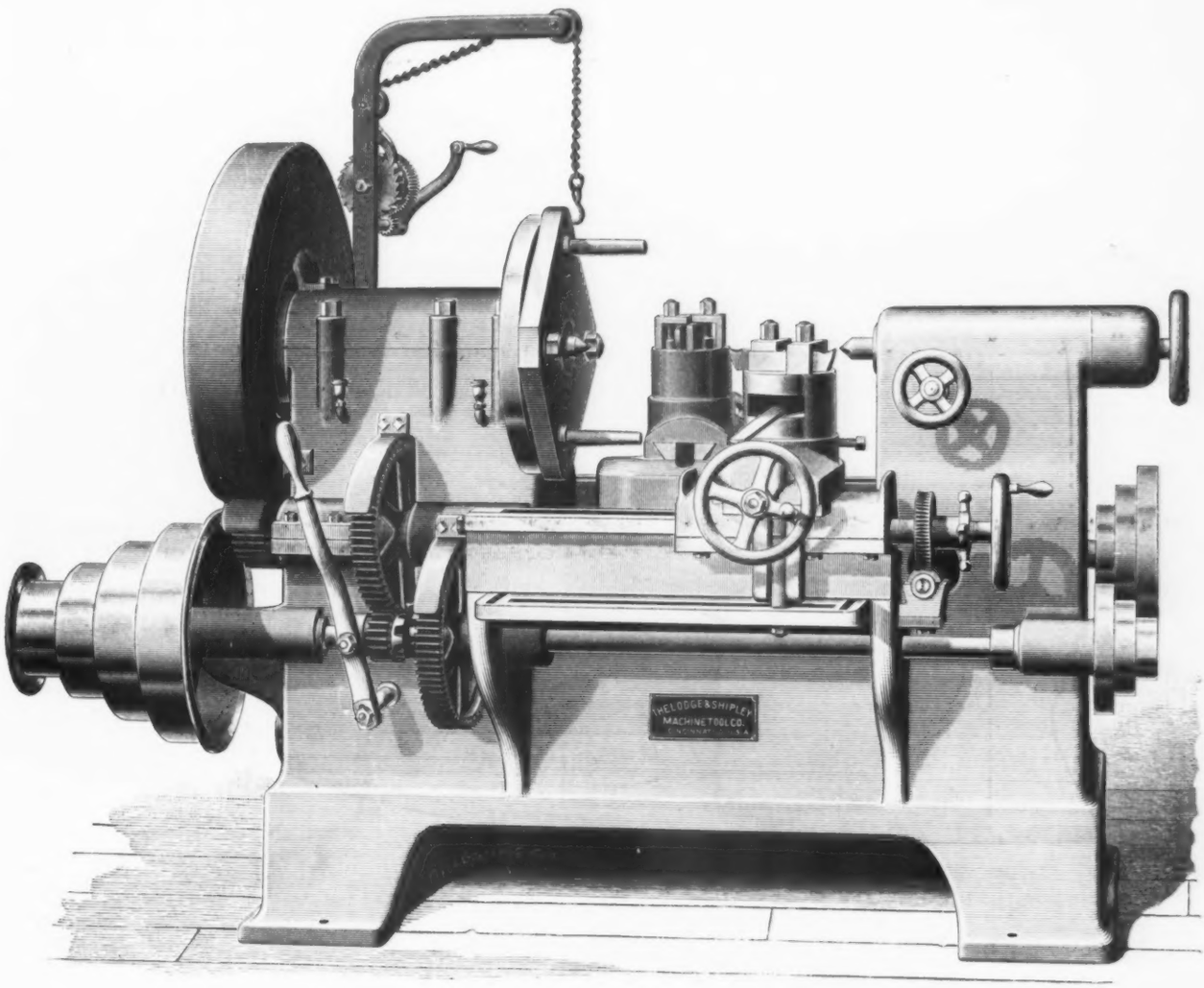
Another feature which cannot fail to strike the reader of the above figures is the steady increase in the number of accidents, which leads us to ask whether it is possible that one of the results of obligatory insurance is the multiplication of such fatalities, in consequence of less care being taken by the insured workman. Such a result was certainly not contemplated by the advocates of the system, and it gives food for thought as to whether the compulsory insurance of workers has proved a success or not. When we take the figures for German workmen in the metal industries who have survived after accidents, and have been indemnified or pensioned for them, we find the total number for the first year to have been 1521; in the following year 3363; while in 1890 it had attained the largely increased total of 11,853. As is very wisely remarked by *Le Génie Civil* of Paris, in contemplating these figures: "We think that the adoption of every means to prevent accidents should be carried out before arranging to repair the damages caused by them." And this we find is now being done by the insurance associations, for it is stated that an aggregate of $14,000,000 of profit which has accrued during the five years has been placed in the reserve fund, a considerable proportion of which is to be devoted to the organization of special means for the prevention of accidents.

Lodge & Shipley 30-Inch Pulley Lathe.

The Lodge & Shipley Machine Tool Company of Cincinnati, Ohio, build a pulley lathe which will admit pulleys of 30-inches diameter by 20-inches face, and will turn pulleys down to 9 inches in diameter. The entire frame of the machine is cast in one piece, including the head, in which the spindle fits, the ways upon which the carriages move, and the foot stock. The power is taken from a 3½-inch belt by a large, four-step cone on the main driving shaft. The head spindle is driven from the main driving shaft by a train of six gears, which includes the back gear. The ratio between the driving shaft and the spindle is 2 to 1 with the back gear out, and 30 to 1 with the back gear in, thus giving a range of eight speeds from 2 to 180 revolutions per minute. The gear on the head spindle is 30 inches in diameter. The spindle is six inches in diameter, and has a 3¼-inch hole through it. The front end of this hole is bored tapering to receive a mandrel, center, or bush. The nose of the spindle is 9¼ inches in diameter and is threaded to receive the chuck or face plate. On the back of the head stock is a swing crane for handling work in or out of the lathe.

The saddles are driven by means of screws, in combination with bronze worm-wheel, steel worm and friction. The front tool block is arranged to carry two tools, either of which may be revolved into position.

The machine weighs 4500 pounds.



THE LODGE & SHIPLEY 30-INCH PULLEY LATHE.

The recently-discovered platinum deposits in New South Wales have been visited by a geological surveyor, who has reported thereupon to the Minister of Mines as follows: The platinum deposits in the Broken-Hill district differ from any previously discovered. Owing to this circumstance and certain general peculiarities in the mode of occurrence of platinum and its allied metals, they possess a considerable amount of scientific interest. All commercial platinum has hitherto been obtained from alluvial deposits, where it occurs in the form of small but well-defined grains scattered through gravels, &c., over wide areas. In no respects do the Broken-Hill deposits resemble these alluvial ones. Authentic instances of platinum occurring in lodes are rare. J. A. Phillips mentions "that small grains of platinum are said to have been occasionally observed in the auriferous quartz of the Beresovsk Mines."

On Saturday, March 4th, there was launched from the shipbuilding yard of the Naval Construction and Armaments Company at Barrow, England, a twin-screw hopper and sand pump dredger, which is said to be the largest dredger in the world. This vessel, says the London *Times*, has been built to the order of the Mersey Dock and Harbor Board, who have been so satisfied with the experiments made in cutting a channel through the Mersey Bar that they have determined to proceed with dredging operations there so that steamers of the largest tonnage may be enabled to enter the river in any state of the tide. A vessel on a gigantic scale was designed by Mr. A. G. Lyster, under the direction of Mr. G. Fosberry Lyster, engineer to the Board, the following being a general description of her dimensions:—Length between perpendiculars, 320 feet; breadth, molded, 46 feet 10 inches; depth, molded, 20 feet 6 inches; gross register tonnage, 2560 tons. She is built of steel to Lloyd's highest class, and has amidships eight large hoppers, four on each side of the vessel, having a total capacity of 3000 tons of sand. A well is formed up the center of the ship between the hoppers to allow the working of a sand pump suction tube, 3 feet 6 inches diameter, through the bottom of the vessel. This tube is raised and lowered by hydraulic power, and when lowered can dredge to a depth of 45 feet. Two large centrifugal pumps having suction and discharge pipes 3 feet in diameter, capable of raising 4000 tons of sand per hour, are driven by two sets of triple expansion engines. The vessel will be able to fill her hoppers with 3000 tons of sand, to proceed to the depositing ground and to get back again to the scene of operations in one hour.

Trial of the Dynamite Gunboat "Vesuvius."

(*Concluded from page 669, March 23.*)

The Rapieff Fuse.

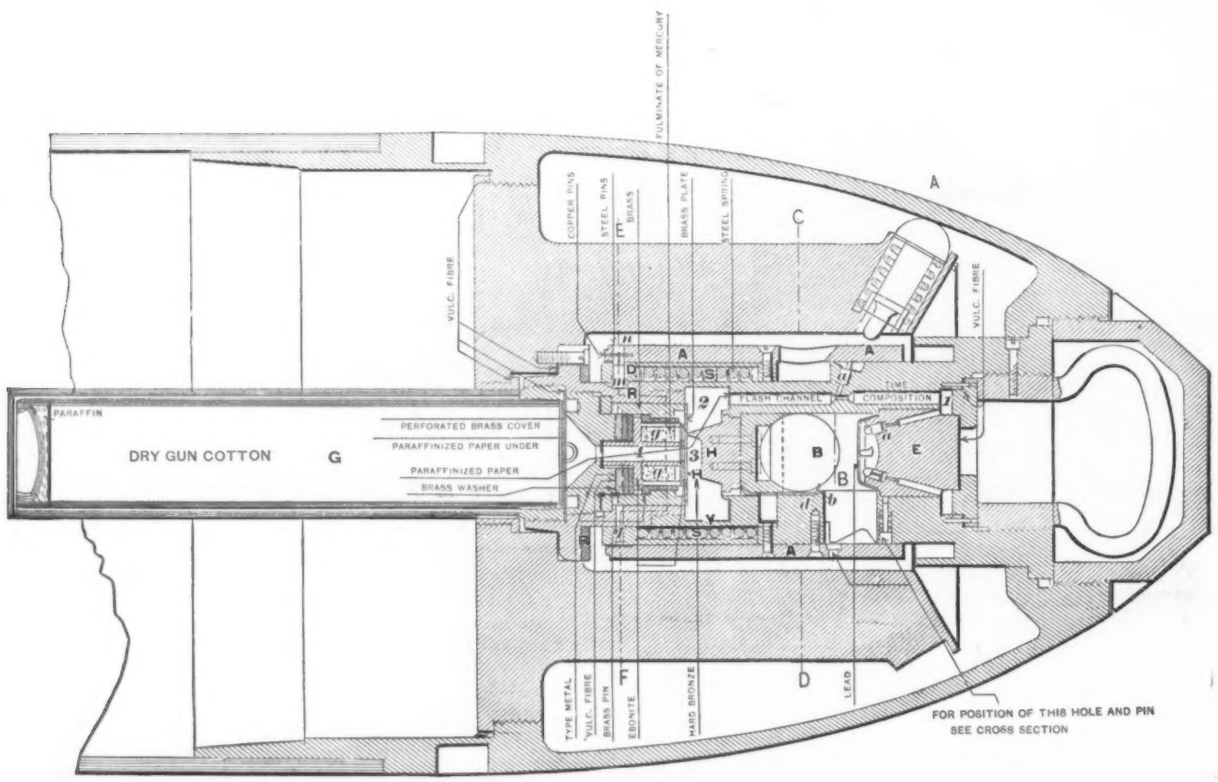
By far the most important feature of the trials was considered, before beginning the programme, to be the proving of the fuse, which is the invention of Captain John Rapieff, formerly of the Russian military service, and who has been identified with the pneumatic system for several years. In designing the fuse the point of safety of action, to prevent there being any premature explosion, had to be considered, as well as certainty of detonation at the proper moment. Unfortunately for the trials at Port Royal, there had been no previous experiments at a proving ground or elsewhere, to show what the fuse would do. As long as this uncertainty existed it was not deemed advisable to fire the projectiles loaded with 200 pounds of gun cotton, which, if it exploded prematurely, would annihilate the vessel; consequently several of the projectiles were loaded with comparatively small charges of gunpowder, the fuse, primer case of wet gun cotton, &c., being however used under the same circumstances as though an explosive charge of gun cotton was to have been fired.

The arrangement of the Rapieff fuse is such that before firing there is perfect safety, as the outside protective sleeve A is in position, covering the caps *a a* of the fuse. This sleeve is ¼ inch thick and is therefore hardly likely to bend out of form unless subjected to a very heavy blow. The idea of using a ball to explode a fulminate cap, which by no means appears here for the first time and in the use of which there is no claim to originality, was adopted as being the surest and simplest. The ball B is locked by two spring fingers, *b b*, which are secured by two projections, *d d*, fixed to the sleeve A. The opinion was advanced that these springs were possibly too strong and that they prevented the action of the ball, but holding the fuse 2 or 3 inches from the ground and then dropping it, gave sufficient shock to dislodge the ball and allow it to roll out. Inside of the sleeve A is another sleeve, D, and between them is confined a spring, S, which tends to separate them, but this is prevented by two short split bolts, *n n*, pinned by two thin brass wires. In continuation of these bolts in sleeve D are placed shouldered pins, *m*, the heads of which protrude into longitudinal beveled grooves in the base castings, R, of the fuse. Besides these bolts the sleeve D is pinned to the same base castings by the two ⅛ inch brass pins *f*. The description thus far is intended to show that the parts operating upon caps are perfectly secured before firing.

At the moment of firing the brass pins *f f* are sheared by the inertia of the sleeves A and D and the spring S, and both sleeves and spring go back about ¼ inch to the soft metal seat provided in the front of the shoulder of the base casting R. During this movement the pins *m* slide on the bevel of their respective grooves and thus push slotted bolts *n n* out of locking and in this way release one sleeve from another. While the acceleration exists both of these sleeves still remain in their back positions on the above-mentioned seat, but when acceleration ceases and a sufficient retardation of projectile is acquired, the elastic force of spring S will reassert itself, and the protecting sleeve A will move forward till its forward end reaches the bottom of the recess provided for the air cushion in the main body of the fuse. In this position the openings in the sleeve come opposite the caps, thus exposing them to the striking action of the outside hammers in the head of the projectile. Conjointly with the movement of the sleeve A the springs *b b*, holding the inner ball, are released, thus enabling it by the impact of the projectile to be thrown forward on the central cap of the forward anvil.

By striking the cap, a No. 2 Berdan cap, in the forward anvil, the fire communicates to the small charge of powder inclosed in the cavity E, and from there to one or more of eight longitudinal holes placed in the body of the fuse and charged with time composition, "Climax," "Safety," or some such material. At the end of the burning of the latter, the flame is communicated through flash channels, charged with sporting powder, to the fulminate caps *g g*. There are six of these caps, each containing 8 grains of fulminate of mercury, a total of 48 grains, which was believed to be greatly in excess of the amount required to produce a detonation of the first order in the dry gun cotton primer charge of 8½ ounces.

If the shell should strike upon the side of its head the outside hammer in that locality is intended to act upon its cap; fire is then communicated directly to the flash channel, the delay action is therefore cut out, and the action of the fuse is immediate.



THE RAPIEFF FUSE.—TRIAL OF THE DYNAMITE GUNBOAT "VESUVIUS."

Points Aimed at in Designing Fuse.

Just what the fuse is intended to do may be summarized as follows:

1. Upon striking water or earth, or any substance not sufficiently hard to crush in the head, only the inner ball acts and the action of the fuse is delayed. This gives time for the projectile to dive under the surface of the water and explode close to the bottom of a vessel. 2. If a solid body, such as stone, armor, rigging, smoke stack, ventilators, &c., be struck slantingly by the head of the projectile, one or more of the outside hammers are put in operation and action is immediate. At the same time it is intended that the ball shall also operate. 3. If the projectile strikes a solid body more or less squarely on the point, then, in addition to the ball acting, the thinner part of the body of the fuse at Y will be crushed in and the conical hammer H acts directly upon the fulminate caps *g g*.

The detonating charge G, consisting of about ¾ pound of compressed dry

gun cotton, is placed in a brass tube supplied with a threaded flange, which is screwed into the base casting R of the fuse. There is a paper and also a perforated metal cover over the detonating charge which is shellacked after being placed in order to hold it in position.

The Experiments with Loaded Projectiles

were carried on over a range established off Hilton Head in the upper portion of the bay. This range was buoyed off at the distances fired at during the stationary practice—that is, at 500, 1000, 1500 and 2000 yards, the positions being accurately determined by theodolites handled by a corps of experienced observers. The first feature of this part of the programme was to fire with vessel and target both stationary; the second was with the vessel moving, the target to remain stationary. Other features of the moving trial included having a boat, towed by a tug, pass along a line perpendicular to the line of fire of the "Vesuvius," while the latter was moving at a 15-knot speed, the tug to travel at a 10-knot gait, and, lastly, five projectiles were to be fired while the "Vesuvius" was advancing at full speed toward a fixed target, the order to fire being given by one of the officers of the naval board, the commanding officer of the "Vesuvius" to judge the distance and valve setting necessary to attain it.

Before Captain Rapieff was willing to have his fuse tried he made a number of experiments to determine the proper strength of the two pins that are used to hold in place the two sleeves that constitute the safety device for the direct action of the percussion primers disposed around the head of the ogival of the shell. These experiments were made with the fuse inserted in the end of a log of wood. It is the shock of discharge that is depended upon to shear the pins referred to and allow the shear to set back, and the difference of the shock due to variations in weight between the log and the loaded projectile was readily calculated.

Meanwhile, 12 shells had been loaded with a mixture of cement, sand and wood, with a blowing charge of 10 pounds of gunpowder instead of gun cotton, and the vessel was moved down to the Hilton Head range. Five of these projectiles were fired at a 2000-yard range, and the accuracy was very satisfactory, 25 yards short being the greatest difference noted. There was no column of foam thrown up other than the usual jet made where the shells strike the water, nor was there any discoloration of the water or other evidence of an explosion. Thinking that 10 pounds of gunpowder might possibly not be sufficient to create much of a commotion upon explosion, it was decided to increase the explosive charge 50 per cent.—that is, to 15 pounds of gunpowder, and to fire the other seven projectiles with that charge. The brass primer cases of some of these projectiles were also filled with gunpowder instead of gun cotton, holes being pierced in the brass cases to admit of a more general diffusion of the powder gases. Others of the projectiles had the primer cases removed entirely, their places being taken by serge bags filled with powder, as it was thought that this would facilitate the ignition of the main charge. A small quantity of soluble gun cotton was, in some instances, placed in the lower flash chamber of each fuse. In spite of all these changes, there was no positive indication of an explosion from any of the projectiles, and it was thought that the percussion ball must have failed to function properly.

The next step was to unload the three remaining projectiles that had been loaded with 15 pounds of gunpowder, and to load them with as much wet compressed gun cotton as the powder space would contain. The primer case and its protecting sleeves were fitted in the usual manner as originally intended, and fuses were fitted in accordance with the scheme as originally experimented with, excepting that in one case the composition time trains were removed and sporting powder was substituted. No successful results were, however, obtained.

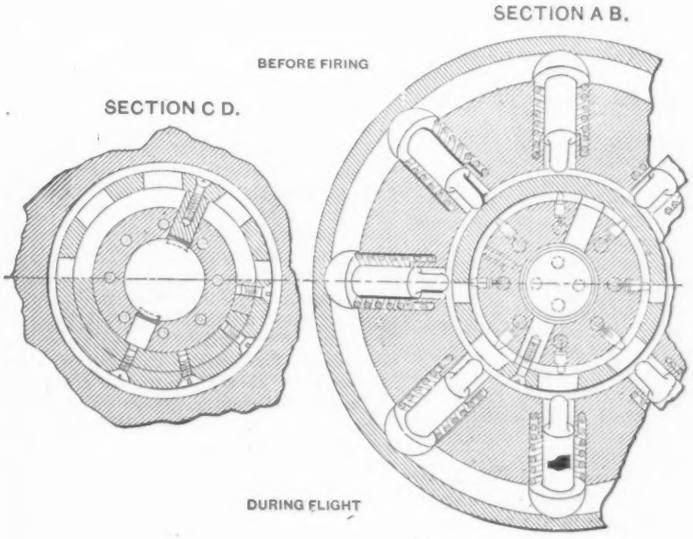
Thinking that this might not all be due to the want of proper working on the part of the ball, experiments were made with fuse and primer case alone, that is, separated altogether from the projectile, but having secured about the primer case somewhat over 1 pound of wet gun cotton. The percussion ball and the anvil in the head of the fuse were removed and the delay action composition was ignited through the action of a piece of slow match, in communication with a little powder in the chamber from which the anvil had been removed. Detonation followed in due course after the lighting of the slow match, showing that the parts of the fuse under trial had functioned properly. Still the report of the discharge was not such as would indicate an explosion of the first order. A second experiment was tried by inclosing a volume of compressed dry gun cotton, equal in amount to the dry and wet used in the former experiment in a tin can and detonating it by means of fulminate of mercury. The result was a report several times louder than in the first trial. This was taken as a confirmation of the opinion that the first explosion was not one of the first order.

Two projectiles loaded with 200 pounds of wet compressed gun cotton were then fired over the range from the 2000-yard mark, the "Vesuvius" being under way and advancing toward the target at a rate of about 16 knots an hour. The fuses, primer cases, &c., were arranged as designed by the inventor, but no detonation was accomplished.

Shell Thrown on Sand.

The next line of experiments was undertaken with the view of ascertaining what the action of the fuse would be if the shell were thrown on the hard sand beach, where, if everything worked properly, there would not be a shadow of a doubt as to the detonation. The first shot was fired at 1,000 yards range, and struck the sand at the desired spot, point first, the angle of fall being about 15° from the horizontal. After digging a trench in the sand about 14 feet long and 1 foot wide it ricocheted, making a leap of 43 yards, again landing upon its point, with its axis nearly perpendicular to the horizon; thence it jumped about 5 yards, landed on its base, making a deep indentation in the sand, and finally it bounced about a dozen yards farther and fell point forward without any explosion taking place. Part of the rotation vanes were torn from the rear end at the first contact with the sand, and one or two other pieces came off at the other points of impact. The rear part of the rear section of the body was considerably flattened and slightly bent, but the rest of the body was uninjured.

An examination of the fuse showed that



Figs. 2 and 3.

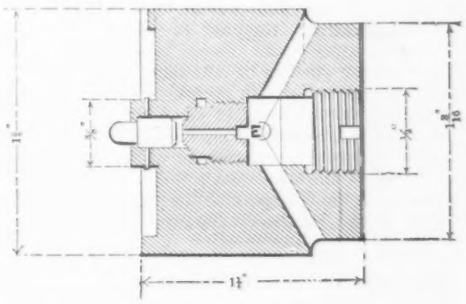


Fig. 4.—Modified Form of Block E, Fig. 1.

THE RAPIEFF FUSE.—TRIAL OF THE DYNAMITE GUNBOAT "VESUVIUS."

the safety pins had been sheared and that the sleeve had worked part way forward, but had been prevented from going farther by a piece of one of the springs that hold the percussion ball in place. It was at first very difficult to see exactly how this could be until the theory was advanced that the shearing of the pins had not taken place until the moment the shell struck on its base on the sand. By none of the other reasons advanced for the failure of the sleeve to work could it be shown how the piece of the broken spring could reach the position in which it was found. At any event the percussion ball itself did not perform its intended functions. The hammers in the ogival worked, however, with sufficient force to have exploded the cap against which they are supposed to strike, as there were several deep dents in the part of the sleeve that covered these caps. The fact that the sleeve was checked in its forward movement prevented the uncovering of the caps and consequently there was no explosion.

A second shell was then prepared for firing on the sand, and from it the percussion nipples in the head were removed, as it was proposed to show the action of the ball alone. When this shell was fired there was no explosion at all, but its action in burrowing along under the sand was remarkable, and formed one of the most interesting features of the tests. When it struck the shore it plunged beneath the surface of the sand about 3 feet, ranged through thick mud and sand, reappeared, and ran close under the surface for about 20 feet, and then disappeared, ranging downward at an angle of 5° below the horizontal, the total distance from the first point of impact to the point of rest, just below the surface, being about 50 feet. The location of the projectile was shown by a crack at the surface of the soil just as though a gigantic mole had scurried along. Examination of the projectile showed that the ball had not moved from its seat, and that the shearing pins had not been injured.

End of Trials.

This practically ended the trials of the fuse, although there were two final shots fired over the Hilton Head range, the projectiles being loaded with 100 pounds of gunpowder and the primer cases also filled with gunpowder. This was done to show for a certainty that there was no explosion, for, if in former cases there had been too small an amount of explosive used to make a disturbance on the water, the firing of 100 pounds of gunpowder would certainly make itself seen and heard. But no explosion nor no noise or disturbance of any kind could be noticed. In addition to the above there were various experiments made to ascertain the effect of distance upon the relation between the fulminate and the detonating charge of dry gun cotton. As a result the modifications in the Rapieff fuse will probably be in the direction of increasing the amount of fulminate and placing it in closer contact with the dry gun cotton, also the charge of the latter will be increased.

Conclusions.

In drawing up its conclusions the Board of Naval Officers, after an extended consideration, decided that while the accuracy of the "Vesuvius" pneumatic guns leaves a great deal to be desired, it is still reasonably sufficient for purposes of naval warfare. The value of the guns is increased by the fact that the projectile contains a heavy charge of a high explosive, and also that this explosive can be safely discharged when the projectile that contains it is armed with a fulminate fuse, and though the particular fuse used in the trials has failed to perform its functions, it is evident that it can be safely fired from the guns. Very likely the firing of heavy charges of high explosives from powder guns may be generally introduced, and, if so, it is quite probable that the value of the pneumatic guns may be lessened, but it is to be observed that such powder guns have not yet made their appearance in the navy, and it is uncertain when they will do so.

When they do appear perhaps they may prove to be simpler in mechanism and more accurate in practice than the guns of the "Vesuvius," but the board has no positive evidence on this point at present, and, therefore, is uncertain to what extent this superiority may obtain, and is also uncertain to what extent the pneumatic system may be improved.

In order to form a judgment as to the comparative accuracy of the two kinds of guns, it would be well to compare the probable rectangles, &c., of the pneumatic guns with those of a rifled mortar or howitzer that would project equal-weight high explosives over equal ranges. But, however these matters may ultimately be decided, the board is of opinion that the pneumatic system as installed on board thr "Vesuvius" is, on the whole, of decided value in naval warfare, though the fuse is quite defective and several other points connected with the mechanism of the guns require attention.

It is also thought, judging from the comparatively superior endurance of the middle gun, that the system is capable of mechanical improvement, and that the guns can probably be made to work more nearly together than they do now. The board has observed the following points in which improvement would be desirable, as tending to the most perfect working of the system. The fiber buffers used in the mechanism do not appear to resist well the hammering of the parts which they cushion; they also appear to swell and flake when much moisture is present, and thus the range and accuracy of the guns is injuriously affected. The buffers should, if possible, be made of some harder and more durable substance. It would be well if some means were taken to prevent the entrance of undue amounts of moisture into the system, as the presence of moisture affects the buffers, as above stated. Valves should be provided to isolate each gun from the others and from the firing reservoirs, in order that a disabled gun could be thrown out and repaired while the others were in use.

Another advance has been made toward building two additional bridges across the East River to Brooklyn, the New York Aldermen having granted the necessary permits to the East River Bridge Company, which has $25,000,000 capital and proposes to begin construction in May. Both bridges will be suspension, and heavier in every way than the Brooklyn Bridge. The Brooklyn Bridge cables are 15¾ inches in diameter. The cables of the new upper bridge will be 21 inches and those of the lower and smaller bridge 18 inches in diameter. Each bridge will have four tracks, and two towers 280 feet high. The north bridge between anchorages will be 3200 feet long, with a center span 1670 feet in the clear. The southern bridge span will be 1470 feet in the clear and 2700 feet between the anchorages. At the pier line both bridges will swing 120 feet above the water. The northern bridge span in the center will be 140 feet above mean high tide, and the center of the southern bridge 135 feet, the same hight as the Brooklyn Bridge. The two bridges will cost over $25,000,000.

Hadfield's Steel Foundry Company, Limited, will, says *Iron* of London, exhibit at Chicago cast-steel projectiles finished complete ready for powder charge, and cast steel mining wheels, with samples of the same articles bent cold, also with arms forged down into knife and fork. The company are also showing in Hadfield manganese steel medallions of Washington and Franklin. Manganese steel dredger pins ready for use will be shown also bent double cold, together with manganese steel ploughshares, links, bushes, &c. The tensile strength of this steel is very high, about 60 tons per square inch, with an elongation of about 40 per cent. on 8 inches. Manganese steel wire drawn down to 30 gauge will also be exhibited. This wire possesses a resistance to electric current of 38 to 40 times that of copper, and about 60 times that of iron or steel wire. One of the special articles shown will be a manganese steel test bar which has been subjected to a tensile stress of 55 tons per square inch. This stress has produced an elongation of 29 per cent. on 8 inches, and the test bar still remain unbroken. This steel is now being employed on a considerable scale, especially for those parts of machinery where great wear and tear are experienced, and in which ordinary steel is not sufficiently durable.

The Torpedo-Boat Destroyer.— The British Government has ordered to be constructed six war vessels of a new class, called "torpedo-boat destroyers," which will hold an intermediate position between the first class torpedo boats and the torpedo gun vessels, or "catchers." Each of the six will be 180 feet long by 18 feet 6 inches broad, with a draft of 5 feet, displacing 220 tons of water. The engines, driving twin screws, will together develop a maximum of 3400 indicated horsepower, giving the vessel the great speed of 27 knots, or upward of 31 English miles, per hour. The bunker capacity will be for between 55 and 60 tons of coal; and the crew will consist of 40 officers and men. One 12 pounder and three 6-pounder quick-firing guns will constitute the armament, in addition to three torpedo tubes. The torpedo-boat destroyers will thus be available where the first-class torpedo boats, being too small, fail—that is, in maintaining a high rate of speed in a seaway; while, on the other hand, they will not draw as much water as the "catchers," the smallest of which displace as much as 525 tons. The new vessels are being built on the Thames, and are stated to be well advanced. Should they be found, after trial, to answer the purpose, 14 more will be immediately laid down.

Plans have been completed for the new bridge over the Harlem river, New York. The structure is to have a clear hight of 26 feet above high tide, which will make it about 16 feet higher than the present bridge. The bridge proper will consist of a draw and two spans. The total length of bridge and approaches will be 2624 feet, the draw-span being 300 feet, giving two clear openings of 104 feet each. The width will be 86 feet, including two tracks for street cars, two roadways for teams and two sidewalks.

A concern in London, says the *Marine Journal*, has started the manufacture of seamless steel boats under a patent process whereby a boat is made of only two plates, each riveted to a bulb keel bar, forming also the stem and stern posts. The ordinary metallic boat is built up of a large number of small steel plates, and, besides being costly in manufacture, the system of numerous seams in very thin plates is objectionable. The new process gives, it is said, a much cheaper article, and one very much better calculated for the principal purpose of these boats—to keep in tighter and more seaworthy condition than wooden boats in hot climates.

Relative Cost of Gas and Electricity.

In an able article, published under the above heading, in the *Engineering Magazine*, C. J. Russell Humphreys discusses the cost of lighting by electricity as compared to that of gas, a question which has been much agitated with varying conclusions during recent years. Mr. Humphreys evidently approaches the subject with ample knowledge of all its details; and his article is a most exhaustive treatment of the question. He marshals therein a long array of facts and figures relative to the output and expenditure of gas companies and electric light companies, from which he draws his deductions. Comparing facts and statistics obtained from official documents, and by personal observation and calculation, the writer reaches the conclusion that for the present electric lighting is more costly than gas lighting, although the future may possibly reduce the cost of the former by the development of cheaper "handling," if we may so term it, of electricity.

Mr. Humphreys' paper is of such general interest that we present a summary of it, with extracts, for the benefit of our readers:

"We are told that one gas acts as a vacuum to another, and so it has seemed in the lighting business. Though the world has absorbed in a vast amount the newer illuminant known as electricity it does not follow that the use of gas has decreased to a corresponding degree. On the contrary, more gas has been used year after year, showing that the world is finding use for a larger amount of artificial light.

"A glance at night along the main thoroughfares of any large city will show a vast increase in the amount of light used as compared with a period of 20 years back. Much lighting is done now purely for advertising purposes. It no longer suffices to have a store lighted so that salesmen and customers can find their way around, before and behind the counters, and stop at that; the whole interior of the shop, and the exterior as well, must be flooded with light, and whether the lighting agent be gas or electricity, it must be of high intensity and in large volume. The effect of this is far-reaching, for the merchant who grows used to bright lights in his store or counting room insists on having a great deal of light at his home. Nor is this all. In days gone by it would suffice if the streets were lighted with lamps few and far between, but now they must be lighted in the fullest meaning of the term. Again, the tendency in recent years to erect sky-scraping buildings, which shut off the natural light from the smaller edifices and the lower stories of the larger ones, entails the use of vastly increased amounts of artificial light during that portion of the 24 hours when Old Sol was once supposed to do all the lighting business. Thus it happens that this large receptive capacity of the world for artificial light has led to the building up of a large business for the electric-light corporations, without by any means snuffing out the older illuminant.

"In support of this assertion it can be shown than in 1891 the gas companies of Massachusetts made 20 per cent. more gas than in 1889. This showing is the more remarkable when we consider the business done by the electric lighting companies of the same State. The figures for 1891 show that the gross receipts of these companies were equal to 45 per cent. of the gross receipts of the gas companies, a statement which is at once a testimonial to the energetic manner in which the electric lighting business has been pressed, and evidence of the increasing demand for artificial light. To illustrate the latter tendency in another way, it may be shown that in the same State, during 1889, the capacity of the incandescent electric light companies aggregated 84,400 lights, reduced to the standard 16-candle lamps, whereas in 1891 the figures had grown to 183,120 lamps. During the same years the capacity of the arc light stations increased from 11,529 to 15,338 lamps."

The question is then asked, "Is this growth to hold for the future, and how will it affect the sale of gas for lighting purposes?" The answer depends largely upon the relative cost of gas and electricity. To obtain this cost Mr. Humphreys reduces his figures to a common standard for the two illuminants—namely, 16-candle light—and then considers the relative amount of capital required in each business per unit of light, and the percentage of gross receipts in each case required to pay the expenses of manufacture and distribution.

The capital required by an electric light company engaged in central station lighting—that is, supplying light to a large number of customers from a central station—is shown to approximate $30 per dynamo capacity of the station, reckoned on a basis of a 16-candle light. The capital required for 1000 feet of yearly output of gas is estimated at $6. Reducing these figures to the basis of a lamp-hour—that is, of 16 candles for one hour—calculation shows the capital required per 16-candle lamp-hour output to be as follows:

For electric light	3.6 cents.
For gas, on same basis	2.6 cents.

According to which the electric lighting plant requires 40 per cent. more capital for doing a given amount of business.

In comparing the relative cost of manufacture of gas and electricity and expressing the same in percentage of gross receipts, the receipts and expenditures are reduced to the common 16-candle lamp-hour standard, with the following result:

	Per cent.
Cost of gas in percentage of gross earnings	71
Cost of electric light in percentage of gross earnings from equal unit of light	91

or, otherwise expressed, the unit of light costs by electricity 20 per cent. more than by gas.

It is thus found that, in order to obtain the unit of light from gas or electricity, we must invest 40 per cent. more capital in the electric business than gas, and the cost of making the unit of light will cost by electricity 20 per cent. more than by gas, as expressed in percentage of gross receipts of the latter. And, as the earning of a 6 per cent. dividend on the capital invested requires in the case of gas an amount equal to 26 per cent. of the gross earnings, and as the capital required in the electric business per unit of light is 40 per cent. greater than in the gas industry, it follows that in order to obtain a profitable investment from the electric business we must obtain for a dividend an amount equal to 36 per cent. of the gross earnings from gas. That is, if A = gross receipts from gas per unit of light, then we must obtain for electric light: (A + 91 per cent.) + (A + 36 per cent.) or 127 per cent. of the price of gas, which simply means that if gas sells for $1 per 1000 feet, the selling price of electricity for an equivalent light must be $1.25.

That this is the practical result so far is evident from the fact that, as before noted, the receipts from electricity per unit of light are about 28 per cent. greater than from gas.

The writer, in conclusion, remarks that his observations have been strictly confined to the conditions that actually obtain to-day in the case of gas and electric lighting. He does not discount the future, and figure on the possibilities of reducing the cost of electricity on the one hand by improvements in the steam engine, or on the other by the possibilities before the gas engineer in converting the energy of the gas into light; remembering that by our present wasteful method we actually utilize but a scant 8 per cent. of the energy of gas in burning it.

After all, the question resolves itself into one of economy in coal consumption; and in the long run that system of illumination will predominate which gives out in the form of light the greatest percentage of the energy of that substance which we are too apt to squander so thoughtlessly—coal.

Solidified Air.

We learn from an English exchange that Professor Dewar, who recently demonstrated his experiments in the liquefaction of air before the Royal Society of London, has communicated to that body, at a late session, a most interesting development of his experiments upon air at very low temperatures. He is stated to have now succeeded in freezing air into a clear transparent solid. The precise nature of this solid is at present doubtful, and can be settled only by further research. It may be a jelly of solid nitrogen containing liquid oxygen, much as calves'-foot jelly contains water diffused in solid gelatine. Or it may be a true ice of liquid air, in which both oxygen and nitrogen exist in the solid form. The doubt arises from the fact that Professor Dewar has not been able by his utmost efforts to solidify pure oxygen, which, unlike other gases, resists the cold produced by its own evaporation under the air pump. Nitrogen, on the other hand, can be frozen with comparative ease. It has already been proved that in the evaporation of liquid air nitrogen boils off first. Consequently the liquid is continually becoming richer in that constituent which has hitherto resisted solidification. It thus becomes a question whether the cold produced is sufficiently great to solidify oxygen, or whether its mixture with nitrogen raises its freezing point, or whether it is not really frozen at all, but merely entangled among the particles of solid nitrogen, like the rosewater in cold cream. The result, whatever may be its precise nature, has been attained by the use of the most powerful appliances at command—a double set of vacuum screens combined with two powerful air pumps. Upon either view of its constitution, the new solid is in the highest degree interesting and hopeful.

How the disabled steamship "Sarnia" was brought safely into Halifax makes a story showing what mechanical skill and industry can accomplish in surmounting great difficulties. While yet over 300 miles from port the officers decided to drill through and break the after crank shaft, which had a combination of fractures, and put the forward shaft in its place. The work of drilling and handling these ponderous pieces of machinery under the circumstances, though a formidable job, was successfully done. Chief Engineer Crawford said: "The broken section is 15½ inches in diameter and weighs 4¾ tons. In order to attach blocks and tackles to it the engine room gratings and a large quantity of the machinery had to be taken apart and stowed to one side. The tackle was then made fast to a winch, and in this way the ponderous piece of steel was lifted from its position. The men worked in six-hour watches. It took just 30 hours to get the engines working again after the forward crank shaft had been got into position."

The University of Minnesota is rapidly growing in number and strength. The number of students in all departments has increased from 780 in 1889 to over 1600 at the present time.

The Reese Universal Beam Mill.

Abram Reese of Pittsburg, Pa., who is widely known as a rolling-mill engineer of large experience, has patented a mill in which he aims to provide for the production of I beams and channels in a universal mill, the general design being also applicable to a universal plate mill.

In rolling I beams and channel-bars grooved rolls are now employed, the different reducing and finishing passes being made through separate grooves of gradu ated gauge and shape, the mills being of the ordinary construction and conformable to the ordinary type of rolling mill, the form and relation of the grooves being their only distinguishing features.

In rolling I-beams for girders and general building purposes the ingots are very large and the rolls are subject to a very great strain in consequence of the power and pressure required in reducing the web of the ingot and causing the flanges to fill the grooves in both rolls. Many passes are necessary in rolling and finishing a beam of ordinary size, and much time, labor and expense entailed.

Grooved rolls are in themselves costly and are subject to very rapid wear, necessitating frequent returning. Their adjustment is practically restricted to exact limits, these being entirely inadequate to the demands of the work to be done. The principal difficulty is in rolling the flanges so as to produce and preserve the proper depth, surface and angle and avoid irregularity and lack of fullness and finish on the edges and sides. The filling of the grooves of the rolls is dependent upon the pressure of the body of the roll between the grooves, the metal of the beam ingot being forced out from the web toward the flanges and into the grooves, the sides of which aid little, if at all, in the rolling and reducing action, their purpose and effect being simply to limit the spread of the metal. The sides of the grooves are not only ineffective as reducing agencies, but are, in fact, obstacles and drags, opposing the free movement of the ingot and tending to hoist and tear the surfaces in which they are in rubbing but not in free rolling contact, impeding the uniform longitudinal stretch of the metal, as well as its lateral spread, and preventing in a great measure the complete filling of the grooves of both upper and lower rolls.

Mr. Reese aims at overcoming these difficulties and contemplates the rolling of I-beams and channel-bars by a system of rolls constituting a universal mill, in which grooved rolls are entirely discarded. He claims to be able to produce such beams with less labor, more rapidly, and at less cost than now incurred in the production of imperfect beams.

In the accompanying drawings, Fig. 1 is a vertical longitudinal section. Fig. 2 is a horizontal section. Fig. 3 is an elevation of the roughing set, Fig. 4 an elevation of the finishing set and Fig. 5 a section of an ingot.

The mill is of a compound or double character, and consists of two separate or distinct sets of rolling appliances for the operation of two separate and independent passes.

A A and B B designate the housings, respectively, of the two roll structures, and C C, Fig. 3, D D, Fig. 4, the horizontal rolls mounted therein. The rolls C C are employed in the first pass to which the ingot is subjected and, in connection with the vertical rolls *c c c' c'*, Figs. 2 and 3, mounted on the same housing, are designed to roll and reduce the web of the I-beam and at the same time to operate positively on the flanges of the beam, so as to determine the exact width and depth of the latter between the flanges and the proper corresponding depth of the flanges. For rolling I-beams the rolls C, Fig. 1,

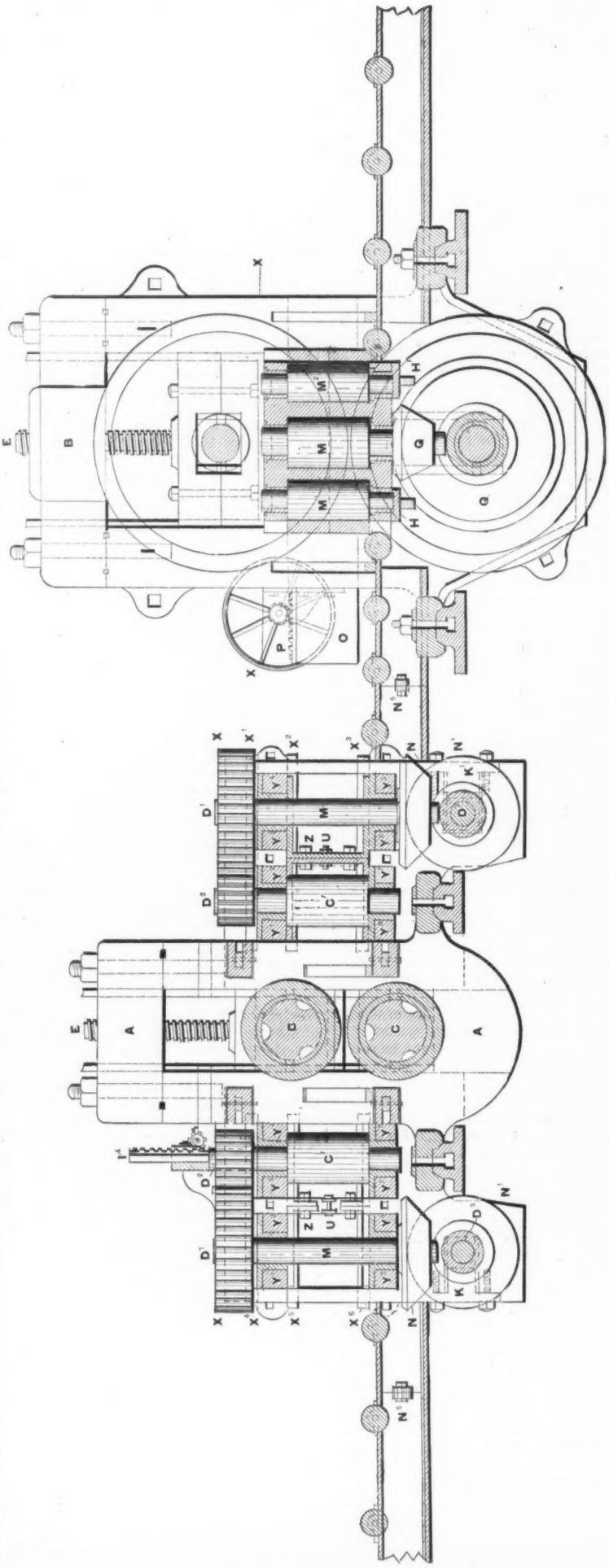


Fig. 1.—Longitudinal Section of Reese Universal Beam Mill.

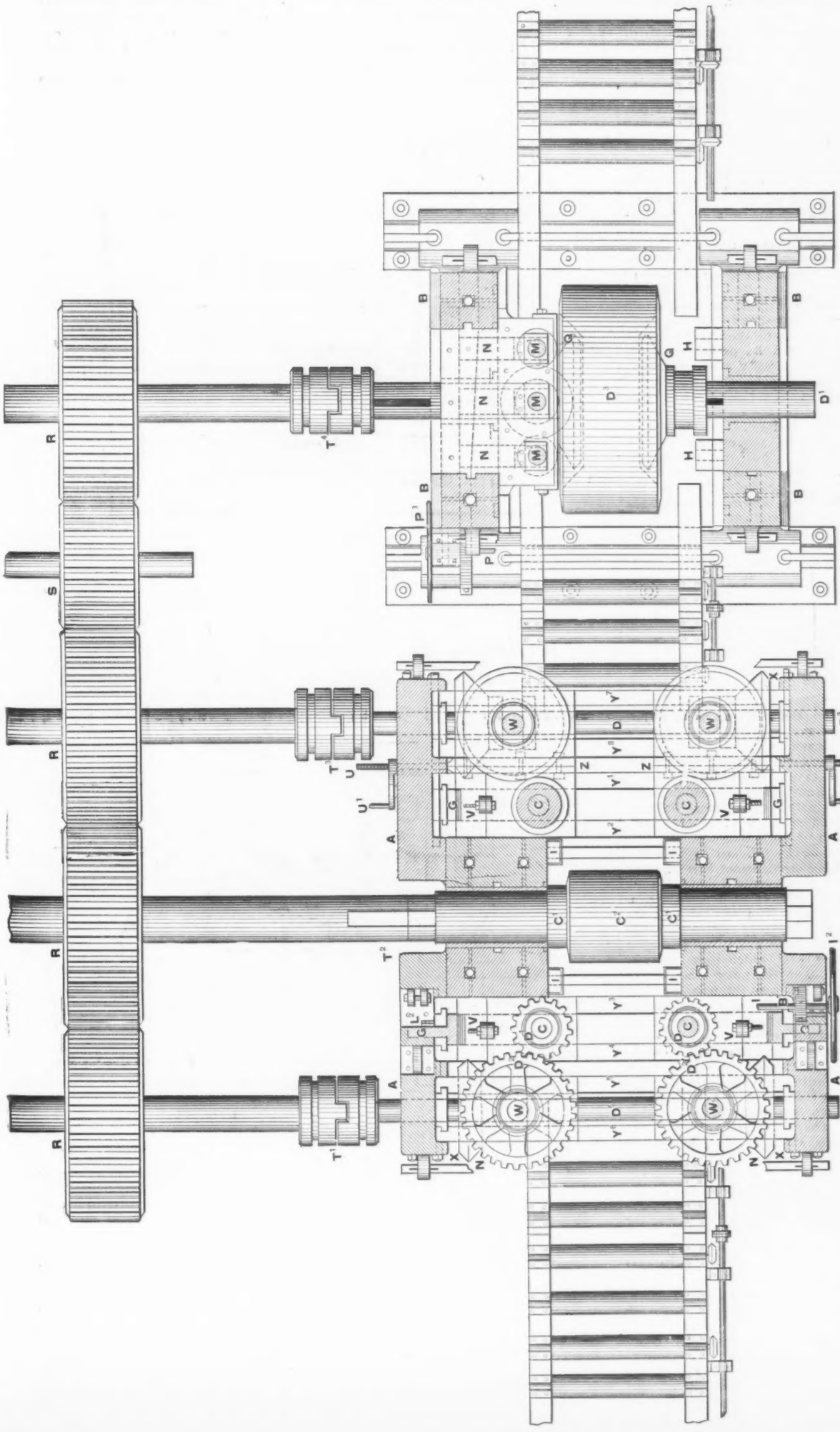


Fig. 2.—Horizontal Section of Reese Universal Beam Mill.

which are of the same size and structure and which in practice are to be of such weight and dimension as may be required, are formed each with a central enlargement, body part, or collar C^2 upon or raised from the neck portions C^1 of the exact width and shape as the space or channel between the flanges on one side of the beam can be produced. To make a channel-bar, a plain roll is used as the top roll.

The lower roll is mounted in stationary boxes, while the upper roll is mounted in adjustable boxes of the usual construction and arrangement, suitable adjusting-screws, rising above the housings and carrying hand or power wheels E E, Fig. 1, being provided and the boxes supported on springs or balanced in any convenient way.

The collars C^2, Fig. 2, are rounded on their angles to correspond with the curve of the inner sides of the flanges of the beams, and between the periphery of the collars C^2 and the body of the rolls the distance is exactly that of the projecting of the flanges from the surface of the web of the beam.

The vertical rolls C, C, C, C, Fig. 2, which operate in connection with the main horizontal roll C^3, are located, respectively, in front of and behind the horizontal rolls, and for the purposes of the lateral adjustment, which is a necessary function of these vertical rolls, they are mounted or journaled in grooved brasses or boxes, fitted to the edges of slots in transverse bars *y y*, Fig. 1. The vertical rolls are coupled on top end by suitable gearing of any length of tooth with vertical shafts, Fig. 2, which work in sliding boxes similar to that of rolls. The shafts are in turn driven by means of the beveled wheels, N N, Fig. 2, one on the lower end of the vertical shafts and the other working upon shaft D^3, Figs. 1 and 2, and provided with a grooved collar and adjustable splene on the shaft, so as to adjust with the vertical shafts W and rolls which are connected, as shown in Fig. 1. The lower ends of shafts, W, engage with the grooves in the collars of wheels on shafts, D, and are readily adjusted with the rolls C C. By this arrangement any desired size and strength of miter wheels and shaft can be used, thus removing the great objection to the use of universal mills, since the arrangement heretofore in use confined the wheels and shafts to such a small size as to make such mills expensive to maintain. The vertical rolls are fed or adjusted inwardly toward the collar C^2 by means of the double wedge shaped vertical slides G G^3, which play in boxes, G G, Fig. 3, on the inner faces of the housings A A and pass through the slots in the bars behind the boxes or brasses in which the vertical rolls have their bearings, the inclined faces of the wedges being outward or toward the boxes, so as to impinge against the latter and force them inward, according as the wedges are lowered. These sides of the boxes or brasses are beveled to correspond with the bevel or taper of the wedges, so that the contacting surfaces shall be in easy sliding touch. In order to take up and compensate for wear due to the friction of the wedges, the devices are provided, shown in Fig. 2, in which V V are provided with bolt attachments, which allow of putting in of liners of desired thickness. The wedges or wedge slides G are operated through the medium of the horizontal shafts I I′, journaled on the housings A A, Fig. 3, above the vertical rolls and carrying the pinion T^2, engaging with the racks I^4, formed on the sides of the wedge slides. On one end of the shaft I is secured a crank arm, I^5, by which it is turned. This shaft may carry a pinion and idlers between the shaft I. Hence by turning shaft, I, all four wedge slides are simultaneously operated, and correspondingly all four vertical rolls are adjusted toward or from the central line of the mill exactly the same distance. This adjustment of the rolls and the mechanism for obtaining it Mr. Reese considers very important features of his mill.

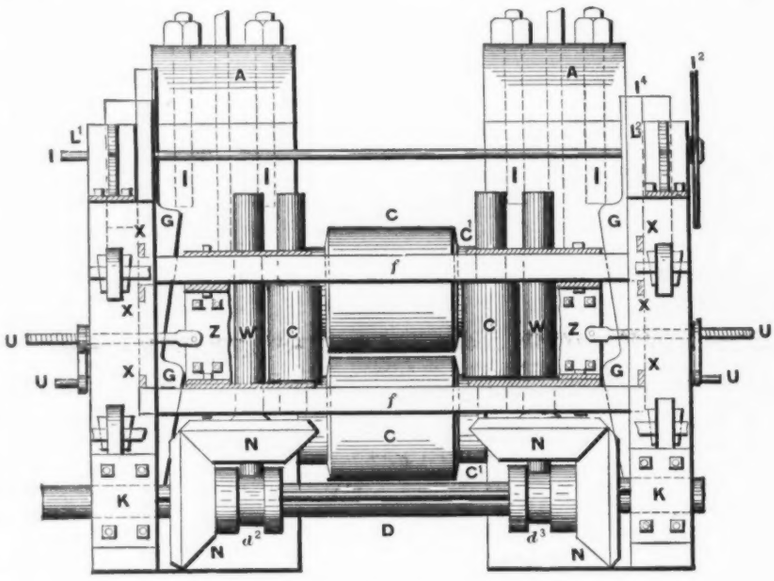


Fig. 3.—Elevation Roughing Rolls.

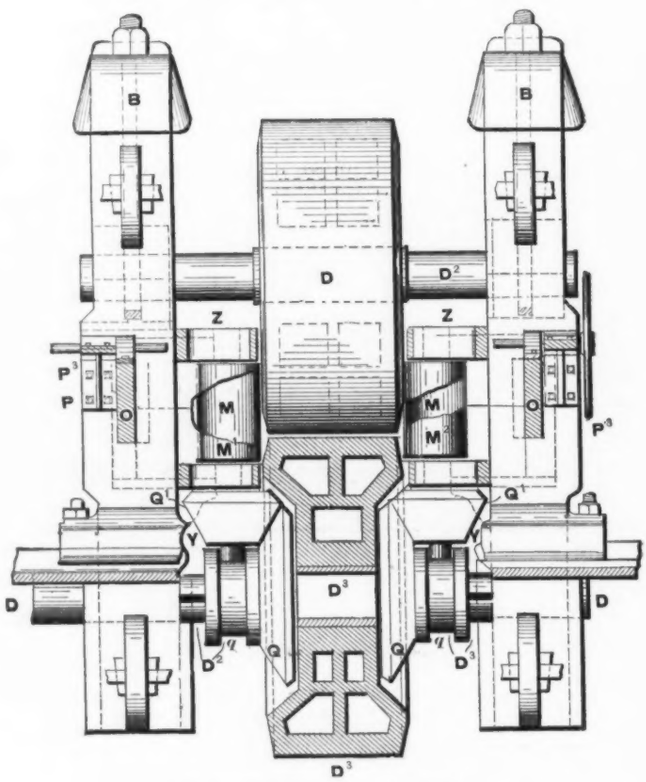


Fig. 4.—Elevation Finishing Set.

Fig. 5.—Section of Ingot.

It is essential to have all four rolls move exactly alike and by means readily controllable. The wedge slides G and connections accomplish this, and when the rolls are once adjusted they cannot be forced back or the wedge slides moved by any pressure against their beveled surfaces, the rolls being thus practically locked in their places. When the wedge slides G are raised, the vertical rolls are free to move outwardly, and are so moved by the cranks U U U U, Fig. 3, until further movement is arrested by the wedge slides.

The appliances so far described constitute one complete part of the mill and have a definite work to perform. The first pass of the ingot, cast or forged to such shape and dimensions as to pass into the bite of the rolls, is made through this part of the mill, and the first reduction of the web of the beam takes place under the action of the collars of the horizontal rolls. At the same time the edges of the beam flanges are rolled by the narrow portions of the horizontal rolls and the width of the beam determined by the vertical rolls, which, however, do not necessarily roll the metal, being out of such operative

position. They tend, however, to prevent undue lateral spreading of the metal under the squeeze of the horizontal rolls and the bending outward of the flanges without the rubbing or tearing effect produced by the outer surfaces of the grooves in grooved horizontal rolls. The web of the beam is reduced in this pass, and at the same time and by the same horizontal rolls the flanges are rolled to a uniform depth, and the channel of the beam accurately shaped to conform to the shape of the collar of the horizontal roll. After the bar has passed and repassed through the forward or roughing rolls until it has been reduced to a thickness about equal to the thickness of the flange then on the ingot or blank, it is then allowed to pass entirely through the second section of the mill. This section, of which the housings B B are a part, is situated any convenient distance back of the first section, so that the beam leaving the first pair of rolls enters the second pair.

The latter consist of the shafts D^2, Fig. 4, and the central disk or collar portions D^3, the latter being of the exact width of the channel spaces in the beams between the flanges—that is, of exactly the same width as the collars on the first pair of rolls. The disks or collars are, however, of exceptionally large diameter, so as to leave ample space between the shafts for the accommodation of the vertical rolls M M and their fittings between the shafts and on line with the vertical centers of the shafts.

While in the first section of the mill the two horizontal rolls are worked positively from the power and their shafts gear together, the lower shaft D, Fig. 4, only of the second section is positively rotated from the power, the rolls being turned by the friction of the beam. The vertical rolls in this section of the mill do the positive rolling, while the horizontal rolls prevent the web from buckling and maintain the flanges from inward bending or crushing. The vertical rolls are M M and are mounted in U-bearings N N, which slide in frames secured on the housings B B.

These U bearings hold 3 vertical rolls, the center one only being coupled, the other two being slightly in the rear and only for the purpose of guides.

The bearing pieces N N are beveled, Fig. 2, on their rear sides, and against the latter press the beveled portions of the horizontal wedge-bars O O, which pass through mortises, P P, Figs. 1, 2 and 4, in the housings B B from front to rear. The frames are secured in any desired manner, but preferably between the journal boxes and upon brackets in the window of the housing of horizontal rolls, the frames having shoulders which abut against the inner sides of the housings B B, so as to sustain lateral pressure.

The wedge-slides O O are somewhat like the wedge slides G, by which the vertical rolls are adjusted, but have each but one beveled face, the slide being of full thickness for one-half its length and being then beveled and diminished to half this thickness, the mortises in the housings being of corresponding widths, so that the slides will move lengthwise only and without any lateral play.

The thinner portions of the wedge-slides O O extend outward from the housings toward the housings A A and are formed with racks, P P, Fig. 1, on their upper edges, with which pinions engage to move the slides in and out, such pinions being mounted on a transverse shaft, journaled in boxes attached to the housings and provided with a crank, P^2, Fig. 1.

The vertical rolls M M are adjusted toward the rolls D^3 by the inward movement of the wedge slides and are moved outwardly by the pressure of the beam. The rolls M M are rotated positively from the shaft of the lower roll D^3 by the beveled gears Q Q, Fig. 1, the large gears Q being splined upon the shafts and provided with grooved collars, with which the lower spindles of the vertical rolls engage, so that the gears are kept in operative engagement while the vertical rolls are adjusted.

When the mill is in operation, the vertical rolls M M are rotated at about the same speed as the vertical rolls of the roughing set, so that the ingot emerging from the pass through the first section of the mill shall not be restrained or dragged. Power is conveyed to the rolls in any desired manner, and a convenient arrangement is shown in which the shafts of the lower rolls are gear coupled through gears, R R, Fig. 2, on their respective shafts and an intermediate idle gear, S, on a separate shaft.

It will be understood that the two sections of the mill constitute two separate and independent mills, but, in respect to their operations and alternate uses, from a train, one section being fed from the other and each dependent upon the operation performed by the other.

As previously stated, the first pass of the fresh unfinished ingot is made through the first section. As the reduced ingot, having its web and flanges uniformly rolled, emerges and enters the pass of the second section, which is widened or enlarged to admit the end of the beam, the upper roll D^3 is lowered and the vertical rolls M M are moved inwardly until the rolls touch and slightly grasp the ingot. The latter now passes from the first horizontal rolls and through the second, whereupon a further inward adjustment of the rolls M M is made and the operation of the mill reversed. The ingot is now fed back through the pass of the rolls D D M M and is positively operated on by the vertical rolls M M, which roll the outer sides of the flanges, properly reducing and evening them, the form of the web and of the inner sides of the flanges being preserved and the bending, contraction, or buckling prevented by the enlargements of the rolls D D. As the rolls D D are not called on to operate positively as reducing appliances and are not subject to any special strain, they need not be heavy in proportion to their diameter, but may be hollow or webbed. The ingot in passing from these rolls again enters the first pair, but in an opposite direction from that of the first pass, and as it enters the vertical rolls are adjusted inwardly, so as to grasp the beam and the latter fed through. The mill is reversed, the rolls adjusted, if necessary, and the first pass repeated, the operations and alternate passes being repeated until the beam is finished. Each set of rolls to work on the bar but one direction only after the finishing set commences to work.

As will be seen, at no period is the ingot subjected to any bending, buckling, or other restraint which would interfere with the proper working of the metal or its uniform reduction. It is free to adapt itself to the exact form of each pass and the pressure is in the direction of forcing the flanges into proper shape and dimensions and of insuring evenness and uniformity.

When it is desired to change the gauge of the mill the horizontal rolls are readily removed and others of different dimensions substituted, and to make a channel bar a plain roll is put on top, the vertical rolls remaining the same.

The horizontal rolls, not being grooved, are more readily and accurately cut than grooved rolls, and may be turned from chilled metal, thus rendering them more durable than unchilled metal.

While this mill is especially adapted to making I-beams and channel bars, it is at the same time a strong universal plate mill on account of its large gearing, and short rolls. Any width of plate less than the inside of beam or channel then in the housing can be made without any change of rolls.

Radnor Pig Iron.—In the account of the visit of the American Institute of Mining Engineers to the Radnor forges, owned by the Canada Iron Furnace Company, Limited, of Montreal, an analysis was reported of the No. 1½ iron made at the furnace plant of the company. In this analysis sulphur was given as 0.460, when the correct figure should have been 0.0460. We understand that even better work is now being done, and that a recent analysis made by the chemist of the company, P. Le Rossignol, showed sulphur to be 0.018 and phosphorus 0.470. The company is striving for even better results, so far as phosphorus contents are concerned, by the careful selection of the ores.

Canadian papers point to the excessive number of mercantile failures in the Dominion compared with the United States. Thus, while in 1890 there was in the United States one failure to every 93 in business, there was in Canada one failure to every 45 in business. In 1891 the figures were one failure to every 82 in business in the United States, and in Canada one to every 42. In 1892 they were one to every 92 in the United States, and in Canada one to every 45. This poor showing for the Dominion means that each year a Canadian wholesaler has to count on more than two out of each 100 persons he sells to not paying the amount of their indebtedness, while in the United States a wholesaler or jobber only loses on two accounts in from 160 to 180. The principal cause assigned for this difference is the attempt to do business with too small a capital, coupled with a disposition to unwisely grant credit.

The Continental correspondent of an English exchange reports that a member of the Saxony Scientific Association advocates the use of liquid carbonic acid for preventing boiler incrustation. The substance is to be fed constantly into the boiler from an apparatus resembling a lubricator, the flow being regulated in proportion to the quantity of lime carbonate contained in the water. This principal element of boiler scale is dissolved by the carbonic acid and thrown down as a precipitate, leaving the plates clean and bright.

The British Vice Consul at Hamburg, Germany, is said to have brought over to England samples of a new system of amelting and casting in vacuum which is being adopted in Austria, Germany, and Switzerland. The system is declared to make possible "the production every fifteen minutes by a single process, with small expenditure of coal, of castings in bronze, iron, steel, copper, or other metals, free from pores and bubbles."

A London exchange reports that E. Morewood & Co., South Wales Tin Plate Works, Llanelly, have completed their new steel works, and arrangements are being made for the commencement of operations. The new plant includes a three high cogging mill. It is estimated that the new mills will be able to turn out nearly 1000 tons of bars weekly.

A report from St. Petersburg mentions that the rise in iron and steel which has taken place is chiefly due to the expectation that the Government will buy larger lots of rails and other iron and steel material during the year for railway purposes. Wooden sleepers on the railway lines are to be replaced in a large measure by iron sleepers.

The Development of the Injector.

From the Proceedings of the Engineers' Club of Philadelphia we take the following paper by Strickland L. Kneass, on the "Development of the Injector:"

It would be necessary to search among the earliest discoveries of which we have record to determine the first inventor who sought to utilize the energy of a discharging liquid or gaseous jet; even though there may be an apparent similarity between the action of the injector and that of the earlier inventions, the difference lies in principle as well as in essential detail; ejectors—as they are termed—can operate with any gas or liquid in connection with any other gas or liquid, while the action of an injector depends upon the expansion and condensation of gaseous fluids, acting within clearly defined limits. Technically, an injector may be defined as an apparatus in which a gaseous jet impinges, and is condensed by a fluid mass whose final kinetic energy exceeds the potential energy it would have under the initial pressure of the motive jet. This requires in addition to the use of condensible gases the existence of certain well-established relations between the areas of the discharging and the receiving nozzles that will serve for a clear distinction between the two types of apparatus. An injector requires under ordinary practical conditions the receiving or delivery tube to have a smaller cross section than that of the motive jet; in an ejector the delivery tube must be the larger.

In the year 1858 Henry Jacques Giffard, an eminent French engineer, brought to the notice of the scientific world a new apparatus for supplying steam boilers with feed water, which attracted the attention of scientific as well as of practical men and occasioned much discussion in engineering circles. At that time scientific knowledge was not so generally distributed as it is at present, and, therefore, the unpretentious little device of Giffard, appearing more like a collection of pipe fittings and flanges than aught else, seemed to many of those who saw it in operation to set at defiance all the well-known laws of mechanics, and to prove the possibility of perpetual motion.

Giffard, however, had so thoroughly mastered the principle of his invention, and enjoyed so clear an appreciation of the possibility of its development, that he not only fully explained the principle underlying its action, but also clearly described in his patent specification many improvements that have since been added. In 1860 he published a small brochure, entitled, "A Theoretical and Practical Paper on the Patented Self Acting Injector," in which he says: "Of all the necessary accessories of a steam engine, perhaps the most important is that used for feeding water to the boiler; upon its proper working depends not only the regular working of the engine, but the safety, the very existence of those who approach the boiler; . . . nevertheless, by a kind of fatality, the apparatus employed up to the present time for feeding is, of all others, that which leaves most to be desired."

After reviewing the disadvantages of the various methods then in use he continues: "It is important to create a new method, free from the imperfections and inconveniences pointed out," and modestly adds: "Such is, it appears to me, the result obtained by the apparatus to which I have given the name of injector because it produces a veritable continuous injection. Its mode of action, extraordinary in appearance, contrary to that which we are in the habit of seeing or supposing, is explained by the simplest laws of mechanics, and has been foreseen and calculated in advance." It is true that the inventor had set forth the theory of the injector substantially as stated in the pamphlet from which quotation has been made, as early as 1850, and before any experimental injector had been constructed.

He thus describes his invention in his provisional specification (English patent, July 23, 1858): "A peculiar construction and arrangement of apparatus for supplying feed water or other liquid to steam or other boilers, and for raising and forcing fluids generally. . . . The invention consists of a steam or injection pipe, which receives the steam from the boiler and directs it in a continuous jet into a small passage, the lower end of which is expanded sufficiently to admit of the entrance of a stream of water, which, surrounding the steam jet pipe, forms an annular jet of water with the steam in the center. . . . The water has an impulsive force imparted to it by the steam jet, and simultaneously receives a considerable amount of heat therefrom before it enters the boiler. On issuing from the narrow passage above referred to, the jet of water enters the second passage, which is expanded at its upper end, . . . such expansion being gradual . . . and serves to diminish without shock the impetus which has been imparted to the fluid." (The American patent is dated April 24, 1860, and contains the same description.)

As originally constructed, the mechanical details of the injector were far from perfect, and this doubtless delayed somewhat its general adoption as boiler feeder; a serious objection also was the great care required to lift the feed water, especially when the suction pipe was very hot; a still more serious trouble with the original Giffard injector, and one characteristic of this type was the necessity for frequent adjustment by hand of the positions of the tubes for any change in the pressure of the steam or of the feed water. Before explaining the means by which this was obviated, it will be necessary to describe briefly the different parts of the injector, their functions and the method of operation. The instrument, Fig. 1, consists, essentially, of three parts: a steam nozzle, *a*, for guiding and forming the steam jet; a combining tube, *b*, that limits the entrance area for the water, and in which the steam impinges the feed water and is condensed; and a delivery tube, *c*, where the velocity of the combined jet is gradually reduced so that it can enter the boiler without loss of energy; a short overflow space, *d*, separates the combining from the delivery tube.

The injector is operated as follows: The spindle *f* is screwed down until the effective area of the steam nozzle *a* is approximately one-quarter that of the lower end of the combining tube; steam is then admitted through A, and, discharging with great velocity through *b*, finds outlet by the overflow space *d* to the waste pipe D; a partial vacuum is formed in the suction pipe B, and when the feed water rises and flows from D the spindle is drawn back, and the impulse received from the discharging steam drives the water through the contracted section of the delivery tube and the branch C into the boiler. The handles F and G are used for adjusting the entrance areas of the water and the steam.

Assuming the correct relations and proportions to exist between the parts, a steam jet after condensation will enter a boiler against its own initial pressure, carrying with it many times its weight of water All other conditions being the same, reduce the boiler pressure, and the steam will not have the power to force the same quantity of water through the delivery tube, and the surplus will therefore spill out through the aperture between the tubes, and issue from the waste pipe; on the other hand, if the pressure be increased, more steam will be discharged, and there will be an insufficient supply of water to condense it during the passage of the jet through the combining tube; consequently, a contraction will occur while the jet is crossing the overflow space, and an indraft of air will result. Therefore, to produce the most efficient action in the injector, the condition of the jet during its passage across the overflow must be neutral at all steam pressures, and the vacuum in the combining tube constant, and as high as possible. There are only two practical ways of accomplishing this and altering the supply of water to suit the supply of steam. First, varying the area through which the feed water is admitted, and, second, changing the pressure under which the water flows. Giffard appreciated this, and manufactured his injector with hand adjustments for both water and steam, so that the required proportions could be obtained under all conditions. But the problem was to make this adjustment automatic. In Giffard's patent two methods are described by which this could be done: by permitting a sliding steam nozzle to be moved away from or toward the combining tube by the pressure of the steam, and balanced by an exterior spring; but this evidently was not practicable. The second method was to increase the pressure of the feed water flowing to the combining tube, by subdividing the steam jet, using a small part for lifting the feed water and delivering it under pressure to the second and larger nozzle; this was clearly described in his specification, and also various modifications that may be permitted by the use of internal or external water or steam jets; it is singular that this line of discovery was not developed by other inventors until many years later.

The simplest and best device would be one that kept the condition of the jet during its passage across the overflow space nearest to its normal condition, and any change in the condition of the jet would tend to restore the changed relations. This was very simply done by William Sellers, in August, 1865, by placing the overflow aperture *d*, Fig. 2, between the combining and delivery tubes, in a closed chamber, formed between the piston head of the movable combining tube *b* and the lower wall of the casing; as the overflow chamber had no outlet to the air, it was necessary to place a relief cock (not shown on figure) beyond the delivery tube in order to start the jet. The combining and delivery tubes *b* and *c* were rigidly connected and moved freely toward and from the steam nozzle, as they were balanced with regard to the boiler pressure by passing through stuffing boxes, *g* and *h*. This formed a perfectly self-regulating injector, for an excess of water supply would cause the closed overflow chamber to fill, exerting an unbalanced upward pressure upon the combining tube until the wasting ceased and the normal condition re-established; a rise in the steam pressure would produce a partial vacuum below the combining tube, and moving it downward until the water space was enlarged sufficiently to admit the required amount of water. The capacity of the injector could be diminished by inserting a taper spindle, *f*, in the steam nozzle, and the combining tube would automatically adjust its position to admit sufficient water to condense the reduced weight of steam discharged. An increase in the hight through which the feed water had to be lifted would be immediately counteracted by a downward movement of the combining tube, and the same quantity of water would flow into the injector as under more favored conditions. This formed an instrument that would operate with the maximum efficiency under a very wide range of steam pressures. Modified,

only in construction for simplicity and for convenience of operation, this injector is largely used at the present time in locomotive service, where the pressure of the steam is subject to material variation.

The other method of automatic adjustment by varying the feed pressure, although not introduced in direct chronological order, will, for convenience, be described in this connection. In 1876 two American patents bearing upon this principle were applied for, one by Ernest Körting of Hanover, Prussia, and the other by John S. Hancock of Boston; each showed an injector, consisting of two distinct jet apparatus, in which the delivery tube of the first or lifting jet discharged into the combining tube of the second set. Steam could be admitted to the nozzles separately, in order that the lifting jet might perform its functions in advance of the forcing set, as shown in Fig. 3.

The operation was as follows: Steam discharging through the lifting steam nozzle a' entered and completely filled its delivery and combining tube, b', entrained the air contained in the suction pipe and discharged through an open cock, d, between the two sets of tubes; when the water rose the outlet was closed and the water compelled to pass through the forcing combining tube b of the second set, and found vent through the final waste cock; the forcing steam nozzle a was then gradually opened, and the second jet established, entering the boiler as soon as final overflow cock d' closed; the spindles f and f'' are provided so that steam may be admitted to the two nozzles separately, and cocks or valves beyond the delivery tube are substituted for the usual starting overflow placed between the combining and delivery tubes.

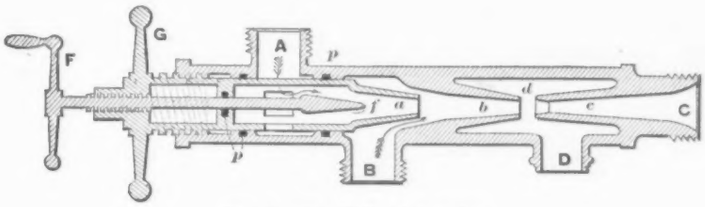


Fig. 1.—The Giffard Injector.

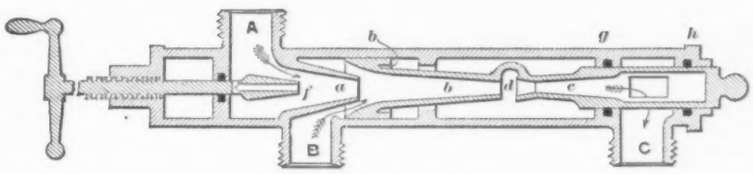


Fig. 2.—Self-Adjusting Injector.

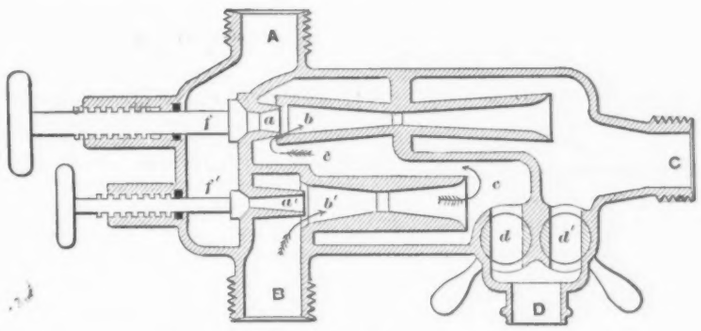


Fig. 3.—Injector with Automatic Adjustment.

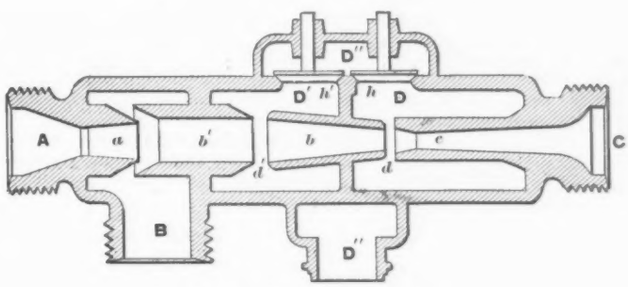


Fig. 4.—Re-starting Injector.

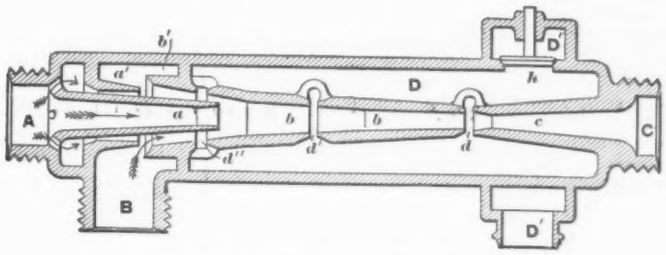


Fig. 5.—The Kneass Injector.

THE DEVELOPMENT OF THE INJECTOR.

When the correct proportions of the tubes and nozzles are closely followed, this double apparatus is a very perfect self-regulating injector. It depends upon the principle of varying the pressure of the feed water with the steam pressure, and this function is performed by the first set of tubes, which increases the pressure in the intermediate chamber c as the steam pressure rises. Numerous special devices were afterward added by later patentees to facilitate the opening and closing of the steam and waste valves by the motion of one starting lever, and it is at present one of the most convenient and universally applied injectors.

Turning now to the development of the other typical division, the single jet apparatus, we find numerous improvements in the construction of the injector made by various inventors. Robinson and Gresham, in 1864, adopted special ways of moving the combining tube by hand, and discovered that the overflow space between the tubes could be considerably lengthened without materially affecting the efficiency of the instrument. Körting, Mack, Little, Sellers, Friedman, Bancroft and others assisted with various special devices to improve the efficiency and to increase the range of capacities and the temperature of feed water that could be used. In 1879 Hamer, Metcalf and Davis introduced the exhaust injector, but as this involves no new principle, but only a difference in the proportions of the parts, no further explanation need be given. In 1881 John Loftus of Albany, N. Y., made the discovery that a live steam injector could be made re-starting, so that if the continuity of the jet were disturbed it would be instantly and automatically re established.

This was effected by introducing a short suction or draft tube, b', Fig. 4, between the steam nozzle a and the combining tube b'; the overflow d', opened into a separate chamber D', closed against admission of the exterior air by means of the check valve. The upper opening d' was made larger than the effective area of the steam nozzle, so that a free discharge of steam could be obtained and a partial vacuum would be formed in the suction pipe B. This type represents all the single-jet automatic injectors of the present day, but as they all have a fixed opening between the steam nozzle and combing tube, the self-adjusting feature is lacking.

In 1885 J. S Bancroft of William Sellers & Co. patented a device that obviated this fault entirely; modifying the form of the double-jet injector by the addition of overflow openings to both sets, all communicating with one overflow chamber, an apparatus was devised that combined all the self-adjusting advantages of the double jet with the restarting feature of the Loftus injector.

Continued experiment, by the same firm developed a simpler device, invented by the writer in 1887, in which the lifting and forcing tubes are in the same axial line. This injector is shown in Fig. 5, where A, B, C, refer, as before, to the steam, water and boiler connections; the steam nozzle is divided into a lifting nozzle, a', and a forcing nozzles a, differing from the double-jet injector already described, in requiring no valves for separate steam admission, as the large additional overflows d'', d', in the combining tube b b permit such free discharge for the steam that a partial vacuum is formed in the suction pipe B, under all conditions of

steam pressure. The arrangement of the nozzles and the common overflow chamber produce a very complete self-regulating action, and obviate the necessity of any hand manipulation for variation in steam pressure.

These devices bring the development of the invention of Giffard up to the present day, and show a marked advance from the original apparatus as manufactured by H. Flaud in 1860. Mention has been made only of those improvements that seem to mark steps in development, and for that reason many well known injectors are not described, as they are simply modifications of the types shown. It is true that many of the improvements here referred to may seem to be merely matters of detail, yet by these modifications the objections urged against the injector as a boiler feeder have been overcome, and it is now a most necessary adjunct of the steam engine.

It need hardly be said that the injector is the most popular method of boiler feeding extant. There have been more than 500,000 manufactured in the United States for various kinds of service, and there is now scarcely a locomotive in the world that is not equipped with one or two instruments. Compact, reliable, economical, it still deserves the high encomium be stowed upon it by the eminent French writer, M. Ch. Combes, Inspector-General and Director, L'Ecole des Mines: "It is, without doubt, the best of all devices hitherto used for feeding boilers, and the best that can be employed, as it is most ingenious and simple."

THE WEEK.

In connection with the new British Labor Bureau, President Mundella of the Board of Trade has sanctioned the employment of 21 labor correspondents in Manchester, Liverpool, Sheffield, Newcastle, Birmingham, and other great trade centers of England. The duty of these correspondents will be to supply periodical information with regard to matters affecting labor in their respective districts. They will communicate with the Central Labor Department, and their reports will be published monthly in the official journal of the Board of Trade.

There were erected in Pittsburgh last year 3,470 buildings at a cost of more than $8,000,000, which is a large increase over any previous year.

The Australian colonies are co-operating in an effort to establish a cable line to Vancouver.

There appears to be no longer any reasonable doubt that the Canadian Pacific Railway Company intend carrying into effect without delay a scheme to secure an independent terminus at New York City, by means of connecting roads from Ogdensburg, opposite Prescott in Canada.

Justice Bremer of the United States Supreme Court, in an address delivered in Washington last week, expressed himself strongly in disapproval of discrimination against the Chinese while other races are privileged with the rights of citizenship.

The iron steamer City of Worcester went on the rocks near New London during a fog, but caulking outside and cement within was sufficient to close the few cracks in her plates.

Arrangements are making in Mexico to ship large quantities of mahogany to the United States.

Americans are buying up the Mexican coffee crop at advanced prices and coffee lands are at a premium.

The president of the New York Central Railroad says there are between 2,000,000 and 3,000,000 railroad cars to be supplied with automatic couplers, under the new law of Congress, and that the expenditure made necessary is about $50,000,000.

Two solid men of iron, ex-Mayor Hewitt and Andrew Carnegie, addressed the General Society of Mechanics and Tradesmen at Masonic Temple, Newark, last week, and gave much good advice.

The theory has been advanced by an old mariner that the White Star freight steamer "Naronic," now given up as lost, "turned turtle" while battering with heavy seas and went to the bottom. Her commander is reported as having said that "she was the deepest rolling ship he had ever seen." Besides, she had a heavy deck-load, including a 40-ton locomotive.

The New York Dock Commissioners have approved of plans for improving the water front on the North river side, New York, by enlarging piers, bulkheads, &c., for the accommodation of shipping and handling of merchandise. The expenditure authorized is about $10,000,000.

There are now about 15,000,000 bushels of wheat in store at Chicago and 16,500,000 at Duluth. The wheat in sight at lake ports approximates 4,000,000 bushels, which is above the average and will be an important factor in making strong freight rates on the lakes.

A syndicate has been formed to cultivate gum trees in Bolivia and export the product to the United States.

The depreciation of silver in Mexico has the effect to check importations and reduce customs receipts to a material extent.

New concerns are constantly starting in opposition to the National Cordage Company.

America's foreign trade, though unsatisfactory in results, bears a very favorable comparison with that of Great Britain. In the aggregate British imports and exports combined were 13 5 per cent. smaller in February than in the same month last year, while American imports and exports combined were but 10 8 per cent. smaller than in the same month last year. But this is not all. While the British imports were unusually small the decrease was largely in the necessary materials of great manufactures. On the other hand, the exports from the United States, though very much smaller than for the same month last year, were yet about as large as was usual in that month a few years ago.

Up to the latest advices four large bulk oil tank steamers had passed through the Suez Canal from the Batoum and Baku regions, and this trade is now supposed to be established. The demand for petroleum in the East has gradually assumed important dimensions, the annual consumption, it is said, amounting to 35,000,000 cases, or thereabouts, valued at some $35,000,000, with a steadily increasing demand. The chief part of this large supply was brought from America mainly by sailing vessels by way of the Cape.

Mayor Gilroy says the city will spend $7,000,000 on the bridges across the Harlem River within the next few years.

Conventions are being held in the Southern States to give intending emigrants all necessary information respecting the attractions of that part of the country.

One of the most marked features in the commerce of Philadelphia for the past year has been the large amount of bituminous coal shipped to foreign countries, especially the West Indies and South America, and the steady gain in this trade. The figures are 402,500 tons. In the near future this business is likely to increase even more rapidly.

The British Consul in Mexico refers to "the almost exclusive preference accorded the United States in commercial matters since the fall of the empire," but the present attitude of the Government is one of strict impartiality, he adds, which encourages British traders to hope that much of the lost ground may be recovered.

A bill which passed the New York Senate by a vote of 17 to 9 permits savings banks to extend the range of their investments to include the bonds of seven Eastern and Western cities named in the bill.

Paterson, New Jersey, has 597 manufacturing establishments, representing 73 industries and employing more than $27,000,000 capital. Ten years ago the number was 52 and the capital employed was only about $11,500,000.

The explosive character of fine dust made in some processes of manufacture, as in flouring and lumber mills, received another terrible illustration last week, when the flouring mills of Kohler Brothers at Litchfield, Ill., were blown to pieces and burnt, entailing a loss of $1,000,000.

In the Pennsylvania Legislature an anti-Pinkerton bill passed the House by a decided majority.

Mr. Dodge, the statistician of the Agricultural Department, has been superseded, and henceforth more accuracy in the reports sent out may be regarded as possible.

The chief organ of the co-operative system in Great Britain, where it has had the most thorough trial, admit that a period of leanness has come about and the largest concerns are drying up.

California canners are rejoicing in the prospect of abundant fruit, beginning with strawberries at the end of the month, good prices and low freight.

The Brazilian mail steamer "Finance" was sold at Newport News for $84,000, which was about the cost of repairs just completed.

President Depew predicts a prosperous business year. The Western granaries are full; railroad rates are being maintained, and nothing but a violent outbreak of cholera could cause disappointment.

It looks as though the Standard Oil Company intended to retain a monopoly of the oil-tank export business.

The President has taken no action in the direction of suspending the discriminating duties on coffee, hides and sugar from Venezuela, Colombia and Hayti beyond asking for information respecting the state of negotiations. It is not supposed that he desires to abolish reciprocity arrangements now in force, but their operation may be made of more general application.

The new cruiser "Detroit" will run over an 80 mile course in Long Island Sound in April, before putting to sea.

The cotton spinners' strike in England, which commenced five months ago and entailed great suffering among thousands of operatives, besides seriously deranging the trade, ended in the acceptance of a reduction in wages equal to seven pence to the pound.

Rapid transit in New York has again come to a halt. The Manhattan Elevated, who were privileged to extend their routes, don't like the terms.

Tennessee will purchase coal lands for the employment of convicts in mining.

Abandoned farms in Maine are being bought up at extremely low prices and brought into cultivation for garden truck or used for manufacturing purposes, sometimes with water power included.

The Iron Age

New York, Thursday, March 30, 1893.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

The Cleveland office of *The Iron Age*, under the management of Ezra S. Adams, will be removed on April 1, from 219 Superior Street to Room 312 of the Cuyahoga Building, Cleveland's latest addition to its modern business structures.

The Recent Labor Decisions.

There have come in quick succession two decisions emanating from United States courts on matters relating to the labor question, which give judicial dignity to doctrines hitherto held only by a few. It is not only the railroad magnates and managers who have believed that Vanderbilt's famous dictum, "the public be d——d," pretty well represented a correct attitude. The men have generally acted with even greater disregard of the third interested party, from whom charters and special privileges spring. The managers have been made to feel that the enjoyment of rights is coupled with responsibilities and duties. The recent decisions alluded to are a departure, in that they impose upon labor obligations which have not been generally recognized as yet.

Judge Ricks of Toledo addressed the engineers and firemen who had declined to handle boycotted cars in the following terms, which cover his conception of the duty of railroad employees:

You are engaged in a service of public character, and the public is not only interested in the manner in which you perform your duties while you continue in that service, but is quite as much interested in the time and circumstances under which you quit that employment. You can't always choose your own time and place for terminating the relations. If you were permitted to do so you might quit your work at a time and place and under circumstances which would involve irreparable damage to your employer and jeopardize the lives of the traveling public. Your employers owe a high duty to the public, which they are compelled to perform under severe penalty, and they have in turn a higher claim upon you and your services than that due from the ordinary employee. This court does not assume the power or compel you to continue your service to your employers against your will, but it does undertake to compel you to perform your whole duty while such relations continue, and does further claim, for the purposes of ascertaining whether its orders have been violated, the right to determine when your relation to your employer legally terminated and when your obligations to observe this order cease. It may, in the meantime, be important for you to reflect and consider whether you can safely proceed to continue in your employer's service with the purpose to quit at a moment when some duty may be required of you which is in violation of some supposed promise or obligation you owe another not your employers. That time for leaving your post of duty might come under circumstances when you would by such act unintentionally imperil the safety and lives intrusted to your employer and do his business vast and irreparable damage. It might, too, unintentionally involve you in conflict with the court because of obstructing its process and interfering with its mandates. I therefore suggest to you and all others who are in similar employment that there ought not to be any strained construction made of the provisions of the court's order. The one safe way to obviate trouble is to quit the service of your employer. If you continue that employment this court will expect you to do your full duty to your employer and to the public, and to observe the orders which have been made in this case.

Far reaching as the establishment of such a doctrine by the highest courts in the land would be, an even more sweeping dictum comes from Judge E. C. Billings of the United States Circuit Court at New Orleans. In November last the employees of the warehousemen of New Orleans went out on a strike. The union men were called out and resisted the effort of their employers to engage other men by intimidation, and in some instances by violence. Proceedings were begun by the United States against the labor organizations involved, but before the suit was argued the strike ended. Although the latter event occurred four months ago, Judge Billings deemed it his duty to pass on the questions involved. After a recital of the facts, the decision concludes:

The question is, "Do these facts establish a case within the statue?" It seems to me this question is tantamount to the question, "Could there be a case under the statute?" It is conceded that the labor organizations were at the outset lawful. But when lawful forces are put into unlawful channels—*i. e.*, when lawful associations take on unlawful purposes and do unlawful acts the associations themselves become unlawful. The evil as well as the unlawfulness of the act of the defendant consists in this, that until certain demands of theirs were complied with they sought to prevent, and did prevent, everybody from moving the commerce of the city. It was the successful effort of the combination of the defendants to intimidate and overawe others who were at work in conducting or carrying on the commerce of the country in which the court finds their error and their violation of the statute. One of the intended results of their combined action was the forced stagnation of all the commerce which flowed through New Orleans. This intent and combined action are none the less unlawful because they included in their scope the paralysis of all other business within the city as well.

For these reasons I think the injunction should issue.

It will be observed that the broad ground is taken that a combination in restraint of commerce is unlawful, and that the organizations themselves are responsible for acts committed with the end in view. Here again the rights of the community are pushed forward. What many have been accustomed to regard as merely a private struggle between the two contending parties is influenced by the rights of the general public.

A surprising quantity of wire rope is used in the operation of elevators in office buildings and warehouses. In a seven-story office building, for instance, in which there are only two elevators, nearly a mile of one-inch wire rope is required for the elevator equipment. It can readily be seen from this statement that the consumption of wire rope for this purpose alone throughout the country is enormous. The construction of very large office buildings above four stories in hight is of comparatively recent date, the movement being scarcely ten years old. In fact, there are not a few important cities in which construction of this character has but just begun. It is probable that already the consumption of wire rope for passenger and freight elevators in buildings is as large as in any other single channel. This is but one of the numerous developments of business enterprise which is steadily increasing the general consumption of iron and steel.

A New Interoceanic Route.

How to span the American continent has been successfully achieved, as illustrated in the immense mass of freight that gives employment to half a dozen railway lines connecting the Atlantic and Pacific coasts, all completed within the last twenty-five years. The stupendous change that has been wrought in the modes of transportation is best realized by reflecting that when measured by the time occupied in transit New York is as near to San Francisco as Boston was within the memory of persons still living, and is likewise central between the Pacific coast and Europe, despite the speed with which steamships now cross the Atlantic. Geographical distance, east and west, whether measured on land or water, has been wonderfully contracted. The question at the present time is not so much how to cross the continent but how to divide it. The Isthmus of Panama since the days of the conqueror, Cortez, has challenged the enterprise of those who would surmount its rocky barriers, but seems to be impregnable. Captain Eads conceived the idea of lifting ships bodily and transporting them from sea to sea by means of a ship railway, with cargoes unbroken—a scheme finally abandoned as impracticable, after persistent effort to enlist capital for the enterprise. About the same time an American in Massachusetts, Learned by name, became convinced that a railway across the narrowest part of Mexico, at the Isthmus of Tehuantepec, was feasible beyond a doubt, and after obtaining a concession from the Mexican Government, a large amount of material was shipped from New York and Southern lumber ports for the work of construction. The deep morass in the Lake region seems to have stopped the progress of his engineers until the concession was forfeited. Thereupon President Diaz resolved to push the enterprise to completion, and at the present time is rewarded by the prospect that communications between the two oceans will be opened before the end of the year. A year or two more must elapse before the harbors at either end of the route—at Coatzacoalcos on the Gulf of Campeachy on the one side and Salina Cruz on the Pacific—shall be ready for the accommodation of ships. The engineer in charge, E. L. Corthell, who was associated with Captain Eads, says the work has been well done, that the grades are easy, the rails are of the heaviest steel and the equipments will be American. This Tehuantepec route, therefore, will be proclaimed a national highway, to be retained under Government control, regardless of overtures for a lease, said to have been made by Frenchmen and others whose ambition has been excited. There is no room

for question between the Mexicans and the Nicaragua Canal promoters respecting precedence in connecting the two oceans, but which route will eventually take the largest share of trade time alone can determine. Mexicans are confident of securing a large amount of foreign trade from the Pacific side, but opinions differ widely respecting the relative degree of financial success which the future will develop as respects the aggregate of business offering, both from the north and south. Engineer Corthell reasons thus:

"The various routes by which commerce moves at present between the Old and the New World, and between Europe and the eastern coast of Asia and Australia are around the Cape of Good Hope, around Cape Horn, via the Suez Canal, across the Pacific Ocean, over the transcontinental railways of the United States, and across the Atlantic and over the Panama Isthmus on the Panama Railroad. Other things being equal, the route that has the greatest advantages will lie nearest to what might be considered the axial line of the world's commerce, which may be drawn on the map in nearly a straight line between Hong Kong and Yokohama on the Asiatic coast, across the Pacific Ocean, through San Francisco, across the United States to New York, and across the Atlantic to Liverpool, Havre and other European ports. A glance at the map of the world, or, better, a study of the globe, will show that the Isthmus of Tehuantepec lies nearest to this axial line of any route that may be fairly considered an 'ocean route.' The distance in a direct line southward from this isthmus to Panama is 1200 miles; to Nicaragua 800 miles."

Among the factors to determine the relative value of routes, not the least is the double handling of cargo at Tehuantepec, as compared with going around the Horn with cargo unbroken.

Malleable Castings.

The malleable iron foundries have increased their capacity remarkably during the past year or two. Not only have old concerns, almost without exception, greatly enlarged their facilities, but a number of new establishments have been started, and all appear to have plenty of business, although the usual complaint is heard in this as in all other branches of manufacture that profits are reduced to almost nothing. The growth of this trade is due mainly to the expansion of the business of agricultural implement manufacturers, who are heavy purchasers of malleable castings. But the consumption of malleables has also increased in many other directions, and large establishments are to be found that do not to any considerable extent depend on the agricultural trade for their *clientele*. The growth of the manufacture of small wares, in almost infinite variety, is proceeding at a rapid rate, and for many of these malleable castings are demanded.

Makers of coke pig iron have found this an inviting field for their attention, and they are attacking with considerable success this last stronghold of charcoal iron, which has hitherto been deemed indispensable for malleable castings. Special qualities of coke pig iron are being made for this purpose, and it is asserted that the percentage of coke iron used has not reached its limit. The aid of chemistry has been invoked in this as in other branches of the pig-iron trade, and some aggressive coke-iron makers claim that they can now furnish material totally innocent of charcoal which will make high-grade malleable castings.

CORRESPONDENCE.

The Storage of Power.

To the Editor: I find much to interest me in *The Iron Age*, and an article on the "Storage of Power," by George Forbes, in your issue of March 16, is in line with what I have last written about turbines. I think, however, that there must have been a misprint or misunderstanding, in the recommendation that the turbine reservoir should be "at least 500 feet above the pumping station." This is perhaps all right for a "Pelton wheel," but too high for a turbine, as it would give a velocity to the water of 179.63 feet per second, equal to over 1000 revolutions per minute of a 2-foot wheel. Now, if Mr. Forbes meant 50 feet, it would be reasonable, for a 2-foot Leffel wheel, to take a well-known example, would make 425 revolutions per minute, under 50 foot head, use 1491 cubic feet of water, and give 111 horse power, by the Leffel tables. It would only require the same power to lift 500 gallons 50 feet that it would to lift 50 gallons 500 feet, and a large per cent. of friction would be saved, both in going up and coming down again.

Both of Mr. Forbes' suggestions are good, that of using the waste power by day to accumulate head for turbines at night, or that of using the waste heat to prepare feed water, and I am not sure which is the best, though I should prefer the turbines where practicable, as you would be pretty sure of getting back 80 per cent., while I think it doubtful, considering loss by radiation, if you could get as good a return from feed water. No published boiler tests show such a gain, in pounds of water per pound of combustible.

Still, where there was no high land near, for a turbine reservoir, I think I should much prefer to heat the feed water, than to rely on storage batteries. There is certainly a very great economy in cost of steam, in keeping the boilers and engines in steady operation, only stopping the boilers, in rotation, at proper intervals, to clean the tubes or flues.

Yours truly,

SAMUEL WEBBER.

CHARLESTOWN, N. H., March 24, 1893.

The most important contract yet made in the history of electrical progress is, according to *Fire and Water*, about to be awarded by the Niagara Cataract Construction Company, builders of the great tunnel inlet channel and wheel pits for the purpose of generating electrical power for transmission to Buffalo and other cities. This contract will be for the construction of a dynamo of 5000 horse-power capacity, the largest ever constructed, and also for a system of transmission which will conduct the electrical power for the generating station to the point of delivery with the least loss of power. Five large electrical companies, three foreign and two in this country, have entered into competition for these contracts. They are the Oberlikon Electric Company of Zurich; Brown, Dooerie & Co. of Baden; Cie de l'Industrie Electrique of Geneva; General Electric Company of New York, and the Westinghouse Electric Company of Pittsburgh. All the companies have submitted plans, designs and miniature plants for the inspection of the Cataract Company. The dynamos are the largest single unit of power ever before attempted. The manner of transmission will be by the alternating current, but the system to be employed is yet to be determined.

OBITUARY.

IRVING A. KILMER.

Irving A. Kilmer, vice-president of the Kilmer Mfg. Company, Newburgh, N. Y., died at his home in that city on the 23d inst. His death was a tragic one, resulting from the swallowing of a large dose of carbolic acid, which he mistook for a tonic which he had been recently taking for indigestion. Mr. Kilmer was born in Cobbleskill, N. Y., in 1858. It is said that he manifested his mechanical talent as early as in his fourth year, at which time he is credited with taking the house clock apart and putting it together again correctly, so that it continued to record the time as formerly. Mr. Kilmer had marked inventive genius, and 17 patents had been taken out by him. He originated the "Figure Eight" hay band and the "Adjustable" and "Arrowhead" bands, and the machines for the manufacture of these products, as well as machinery for the making of barb wire. Among other inventions was a collar for cylinder shafts. The company of which he was vice-president and general mechanical engineer were established in 1879 and have had a most prosperous career and now employ some 375 hands. Mr. Kilmer's sad and sudden death has called out many expressions of sympathy and sorrow.

JOHN JACOB KINZER.

The death is announced of John Jacob Kinzer of the firm of the Kinzer-Jones Mfg. Company, founders and hardware manufacturers of Pittsburgh. For a long time past the health of Mr. Kinzer has been failing, and a little more than a month ago he went to Florida for the purpose of obtaining rest and with the expectation of again building up his health. It was from that place that a dispatch was received in Pittsburgh on Sunday, the 26th inst., announcing his death. Mr. Kinzer was in his sixty-fifth year and was the son of Mathias and Christina Kinzer, who came from Germany to Pittsburgh in 1832. At the age of 17 he entered the employ of Livingston, Robinson & Co. of the Pittsburgh Novelty Works, and later became a member of the firm. This relationship continued until about 1870, when he withdrew and established himself in the foundry business. Two years later he took Alva Jones into partnership, and later his son Matthew became a member of the firm.

COL. F. A. MASON.

Col. Frederick A. Mason of Bridgeport, Conn., died at Cornwall, March 25, from a disease of the brain. Failing health three years ago compelled him to sever his connection with the Bridgeport Brass Company, of which he was treasurer. He was born in Torrington, Conn., in 1842, and for years was commanding officer of the 13th Regiment, of Brooklyn, being in command of that organization during the Orange riots of 1871. At one time he was connected with Benedict & Burnham, was formerly president of the People's Steamboat Company, operating between Bridgeport and New York, and a director in the Pequonnock National Bank.

The seven months' strike of coal miners in the Monongahela Valley, now declared off, cost the operators and men fully $5,000,000, and the cotton strike just ended in England cost nearly $8,000,000 in wages.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., March 28, 1893

The superserviceable zeal of the economic doctrinaires is not received with favor by the authorities here. Mr. Springer, ex and prospective Chairman of Ways and Means, in conversation on the officious course of the Tariff Reform Club, remarked to the correspondent of *The Iron Age*: "The project of Ellery Anderson or Mr. Shearman to prepare tariff reform bills to be referred to the Committee on Ways and Means for their consideration and adoption is a piece of impertinence. If their bills ever reach the committee, they will be put in the waste basket. The House of Representatives of the United States Congress is the only authority under the Constitution to prepare measures for the raising of revenue. I, for one, do not intend to delegate my share of this duty to men of the Anderson or Shearman stripe, who are not responsible."

Representatives McMillin, Breckenridge and others entertain the same view.

The President and Secretary Carlisle have given the bill as it has appeared in the public prints a casual examination, but have not been particularly impressed by its soundness in theory nor its feasibility in practice. The best these high officials could say was that these men were entitled to their opinions on their hobby—that no particular harm can happen from a free and untrammeled discussion of this important question.

It is very apparent from the utterances of Mr. Springer and his colleagues who expect to compile the proposed tariff reform bill that the work should be performed in the Ways and Means Committee Room, and not by officious and interfering outsiders who are not responsible to the people nor to the Government. Secretary Carlisle and these gentlemen have a complete understanding as to the methods and manner of the preparation of the contemplated tariff bill.

The knowledge and experience which Secretary Carlisle possesses on economic questions will be of great service to the members of the committee. They therefore propose to confer with him and the Department very extensively concerning every step in the reform measure. There is already accumulated a large mass of material, and they expect much more, which will be utilized by the committee in conference with the Secretary during the summer, in order to have the bill ready at as early a period as possible. It was thought at one time that it might be advisable to have it in readiness as early as September, at which time the President might deem it advisable to convene Congress. This idea for the present has been abandoned. Unless some unexpected emergency should arise, Congress may not come together until the regular session.

This will enable Secretary Carlisle and those who are co-operating with him to devote more time to their labors.

The Secretary said to day that he would take the bill up soon and give it his attention. When ready the President will determine when to have it introduced, referred, reported upon and discussed by Congress.

The Ordnance Bureau of the Navy Department have been making some recent interesting practical tests of armor at Indian Head, which relate directly to the groups of plates for actual use on ships and not for scientific purposes solely, as heretofore in important tests.

The following gives in brief the results of a test of 14 inch diagonal armor of the "Oregon" at the Naval Ordnance Proving Ground, Indian Head, Md., March 6, 1893.

For acceptance of 14-inch nickel plate manufactured by the Bethlehem Iron Company. Three rounds fired from 10-inch breech-loading rifle; charge, 12.975 pounds; striking velocity, 1381 foot-seconds; Carpenter armor-piercing shell, 500 pounds.

Round 1.—Penetration, 14.1 inches; upper right corner; hole smooth, with five cracks at the apex; usual fringe and bulge on the face of plate; projectile rebounded 80 feet; backing and structure intact.

Round 2.—Bottom right corner; penetration, 13.2 inches; an irregular crack, top to bottom of plate 0.5 inch wide on the face; projectile rebounded 10 feet.

Round 3.—Bottom; penetration, 14.2 inches; hole smooth; five cracks; projectile rebounded entire.

In every round backing and structure intact.

The plate, though cracked, was in very good condition. No part detached nor backing exposed.

Acceptance of group of armor recommended.

Test "Oregon's" 4 inch casemate armor, March 7.

A 4-inch nickel steel plate from Carnegie, Phipps & Co., representing 4 inch casemate armor of battle ship "Oregon."

Attacked with Carpenter projectile from 4-inch rapid firing gun, and first submitted to the premium test under the new specifications.

Round 1.—Carpenter armor piercing shell, charge 8 pounds 11.6 ounces; velocity 1491 foot-seconds, penetrated the plate and part of backing, being brought to rest with its base 15 inches in from face of plate. Hole smooth, for 3 inches; there was an annular crack. Location of shot, center.

Round 2.—Carpenter armor-piercing shell, charge 10 pounds 7.5 ounces; velocity 1676 foot-seconds. Three and one half calibers from first hole. Penetrated plate and 36 inches of backing, stopped by timbers in rear. Hole clean; normal annular crack as Round 1. Projectile shortened 0.03 inch, otherwise undeformed.

This plate failed to pass premium test, third round, under conditions for acceptance.

Round 3.—Carpenter armor-piercing shell, charge 9.3 pounds, velocity 1561 foot-seconds, impact 3½ calibers from nearest shot hole. Penetrated plate and backing to third tier of timbers.

Plate passed acceptance test.

Premium test "New York" 4 inch plate, March 12, 1893, of second half of group of 4-inch nickel steel plate, Carnegie, Phipps & Co., representing side armor United States ship "New York." Plate on 36-inch oak backing, held by all armor bolts.

Three rounds Carpenter armor-piercing shells from 4 inch guns; velocity 1595 foot-seconds each. Located in apex of triangle, the sides being 14 inches length. All projectiles 33 pounds; charge 9.56 pounds.

Round 1.—Penetrated plate and about 6 inches of backing. The base of shell was at rest 10.5 inches from the face of the plate. Effect on plate normal, with fractured back bulge.

Round 2.—Penetrated plate and 17 inches of backing. Projectile at rest 16.2 inches from face.

Round 3.—Penetrated plate and 12 inches of backing and at rest 16.2 inches from base of the plate.

A fourth round was fired with a velocity of 16.50 foot-seconds the highest velocity for premium test according to the new armor contract. Shell 33 pounds, charge 10 pounds 7.5 ounces. Penetrated the plate and at rest 26.5 inches from face.

This plate passed premium test according to both old and new armor contracts and received premium allowed on the group represented.

PERSONAL.

J. S. Jeans, secretary of the Iron and Steel Institute, will visit this country in May, as the representative of the British Iron Trade Association, of which he is also secretary.

Professor Martens of Berlin, who is in charge of the German Testing Bureau, is expected in June.

F. C. Smink, treasurer and general manager of the Reading Iron Company, has gone to Cuba. This company do a large business in sugar-mill machinery.

Colonel Auchmuty, founder of the Mechanical Trade Schools, has been fortunate in surviving a surgical operation, made necessary by an old wound, but he loses a leg.

W. Hartmann, editor of the *Zeitschrift des Vereines Deutscher Ingenieure*, a society of engineers with a membership of over 6000, is on his way to Chicago to arrange the exhibit of the society and to prepare for the work of reporting on the Columbian Fair.

Among the recent arrivals from Europe is H. A. Buek, who has been one of the German Commissioners at the Centennial Exposition, and has since acted in a similar capacity with every large undertaking of the kind.

Prof. A. Riedler, the famous German engineer, designer of pumping and air-compressing machinery, has arrived. He is accompanied by six assistants, to aid him in his work of gathering data and putting them into shape.

Capt. A. E. Hunt of the Pittsburgh Reduction Company, manufacturers of aluminum, has returned, after a month's stay in the South.

New Publications.

THE STANDARD GUIDE TO CHICAGO FOR 1893. World's Fair edition. 552 pages. Scarlet cloth. Published by the Standard Guide Company, 358 Dearborn street, Chicago.

This is a completely revised edition of Flinn's publication on Chicago, which has now become thoroughly known as one of the best of its kind. It is profusely illustrated and contains a great deal of interesting matter pertaining to the business interests of the city as well as the usual details regarding points of general interest which are handled in guide books. Those who propose to visit Chicago and the World's Fair this summer will do well to provide themselves with a copy of this work, as they may then be able to lay out their time to better advantage.

GEOLOGIC ATLAS OF THE UNITED STATES. U. S. GEOLOGICAL SURVEY, J. W. Powell, Director. Washington, D. C., 1892.

The first installment of the great geologic atlas of the United States, just issued from the engraving department of the U. S. Geological Survey at Washington, includes maps of the Chattanooga and Kingston districts of Tennessee, Hawley district of Massachusetts, and Sacramento and Lassen Peak districts of California. These five sections are treated in a manner which bears ample evidence of the thoroughness of the surveys which they record. Each separate district illustrated is accompanied by a sheet of text explanatory of the general principles of the geologic atlas. Other sheets appended to the maps are descriptive of the topography, stratography, geology, structure and mineral resources, &c., of the different districts treated, together with a special sheet outlining their geological history in a very comprehensive manner. The maps de-

scriptive of each district are 21 x 18 inches, the scales used being 1 inch to 1 mile, 1 inch to 2 miles, or 1 inch to 4 miles. These atlas sheets are beautifully engraved, and embrace distinct maps showing the topography, areal geology, structure sections, economic geology and columnar sections of each district. In the map of structure sections the sections are introduced in profile across the topographical map at intervals, upon the exact line of country which they represent. The atlas sheets being parts of one great map, are laid out without reference to political boundaries of any sort. They are not State, county or town maps, but only parts of one map of the United States, although for convenience of reference they are given such names as will readily suggest the region shown. A glance at these initial sheets will give some idea of the vastness of the work undertaken by the Geological Survey when it is known that several thousand of such sheets will be required to complete the large topographic and geologic maps of the United States now being made by the surveyors.

COALING, DOCKING AND REPAIRING FACILITIES OF THE PORTS OF THE WORLD, WITH ANALYSES OF DIFFERENT KINDS OF COAL. Office of Naval Intelligence, Washington. 1892

The third edition of this Government hand book appears in an altered form. The discussion upon comparative merits of anthracite and bituminous coal, which formed the main feature of the former editions, has been omitted; but much new and valuable information is afforded. The first section of the work contains tables showing the coal to be had at the ports of the North Atlantic, South Atlantic, Pacific, Asiatic and European stations, together with details of the usual supply on hand, cost per ton, manner of coaling, and information as to Government coaling stations, coal mines and other coaling ports in the vicinity, which should be of great value to naval men in particular, and to all interested in shipping in general. The second part, which is a new feature of the work, contains full particulars of the docking and repairing facilities to be found in every port of the world, the information in regard to which has been obtained from various reliable sources, native and foreign. The details given in connection with each port include dimensions and descriptions of docks, hights of tides, character of repairs that can be accomplished, diameter and length of largest shafts that can be turned out, diameter of largest pipes that can be brazed, and weight of largest castings that can be made there; together with names of shipyards or machine shops having facilities for undertaking repairs on steamers. In addition to coaling and repairing information, the book contains a third section, comprising tables showing the evaporative power of various American and foreign coals, tests and analyses, and specific weight, bulk and gravity of different coals, together with prices and other details, which afford as full information on this subject as it is possible to desire. Assistant Engineer W. H. Allerdice, U. S. Navy, of the Intelligence Staff, the compiler of the present edition, appears to have done his work of preparation well in producing a text-book which is admirably adapted for its purpose.

The company recently organized at North Tonawanda, N. Y., for the manufacture of the Spang Pressure Blower and Exhausters have been incorporated as the North Tonawanda Mfg. Company. It has been announced that the company would be known as the Electric City Machine Company, but it was not possible to obtain articles of incorporation under that title. The company begin business with a large number of orders booked.

Notes on British Armor and Ordnance.

In his annual statement accompanying the British navy estimates for 1893-94, the First Lord of the Admiralty deals briefly with several points of interest in connection with armor and ordnance. With regard to the former it is stated that experiments conducted during the past year in England have given satisfactory results increased resistance of plates having been obtained. Improvements have been made in the manufacture of both compound and steel armor plates. Referring to the Harvey process, without, however, mentioning it by name, the First Lord says that one of the leading English armor plate manufacturers has produced steel armor which, having been treated in manufacture by a process originating in America, has been found on trial to combine in a most remarkable manner resistance to penetration with an almost total absence of cracking. It is added that further experiments are to be made and that the results may have an important influence on future construction.

In considering the subject of naval ordnance the fact is noted that a 12 inch breech loading steel and wire gun of a new design, intended for the armament of the new battle ships, is now under manufacture. This gun is to be provided with a hydraulic mount capable of being worked entirely by hand power in case of accident or failure of any part of the mechanism.

Cordite, a new smokeless powder, is said by the First Lord to have given satisfactory results in different climates, at home and abroad, and it has been used in the British gunnery ships during the past year for practice. It is to be adopted for use in the British naval service, replacing all other powders for rapid fire guns. Concerning cordite, it may be added that it takes its name from the form in which it is made up. But little information has been published regarding it. According to a brief description which has appeared in print, it is closely related in composition to blasting gelatine, an exlosive first produced by Nobel in 1879; but cordite contains a greater percentage of nitrocellulose, thus probably partaking of the nature of gun cotton, the most stable of the numerous modern high explosives. In its manufacture cordite is first obtained as a substance having the consistency of a moderately thick jelly. This is pressed through holes, thus forming soft and pliable cords, which afterward become tough and are then cut the necessary lengths and packed side by side in cartridge cases. Strips of small diameter give a more rapid combustion than thicker ones. Cordite is of a chocolate brown color on the outside, and when broken shows a light gray section, much like fine grained pumice stone. When burned in the open air in small quantities, it burns noiselessly and with only a moderate degree of rapidity. When used as ammunition it is said to leave no residue in the bore of the gun and to give off but a slight filmy vapor, which disappears very quickly. Cordite is also reported to have given good results when employed as a smokeless powder for small arms, and will probably be used with the new magazine rifle for the British army.

Baker's submarine war boat, built at Detroit, is being considered by the War Department. It is 40 feet long and built of oak plank. The novelty of the boat is in the propeller wheels. There are two 24-inch wheels, one on each side of the boat, connected with one shaft amidships. To the ends of the shaft are attached gear wheels, working in the gear attached to propellers, which are turned in any position by means of a sleeve around the shaft. This sleeve is connected to a hand wheel with chain belting. By means of this hand wheel the propellers may be placed in any position. The propellers are protected by brackets from coming in contact with any obstacle. The rudder fits close to the hull and the boat answers it readily.

Trade Publications.

COOLBAUGH & POMEROY of 29 Broadway, New York, agents of the Lukens Iron & Steel Company of Coatesville, Pa., in a pamphlet just issued, print a series of tests of fire-box steel plates made for the Baldwin Locomotive Works, for the Missouri Pacific Railroad, the Chicago, Milwaukee & St. Paul, the Louisville & Nashville, the Buffalo, Rochester & Pittsburgh, and others. The Lukens Company have a three-high train with 34-inch rolls, 120-inch wide, and shears circles from 20 inches up to 90 inches in diameter on patent shears. A flanging machine flanges rounds from 12 to 72 inches.

"HINTS ON STEEL" is a small pamphlet issued by the Carpenter Steel Company of Reading, Pa., the author being James H. Carpenter, who has been the creator of the enterprise. The pamphlet deals with the discussion of a good many of the practical points which arise in the treatment of crucible steel generally, and treats specially of the Carpenter air-hardening steel, and with forging, hardening and tempering steel. Brief chapters refer to the making of steel dies and to annealing, the balance of the little book being taken up by a description of the series of different brands of steel manufactured for a large variety of purposes by the Carpenter Steel Company and by lists of the sizes and of the extras charged on special sizes.

THE CONSTRUCTION AND USE OF THE TABOR INDICATOR are discussed very plainly and thoroughly in a pamphlet issued by the Ashcroft Mfg. Company of 111 Liberty street, New York. It describes the special peculiarity of this indicator—which lies in the means employed to communicate a straight-line movement to the pencil—and its construction in detail. It then goes into the management and care of the indicator, and mentions the uses to which it may be put. The book does much more than merely describe the indicator—it contains a great deal of information of value to all those having anything to do with the steam engine.

WHAT WE MAY TERM a pocket-book treating of gate valves and fire hydrants has just been published by the Chapman Valve Mfg. Company of Indian Orchard, Mass. There is also an engineering appendix in which have been collected various tables, formulas, &c., of especial use to engineers, machinists and all having to do with the construction or maintenance of work of all kinds. In addition there are valuable articles on steam, electricity and refrigeration, which were especially prepared for this work.

CLARK BROS. of Belmont, N. Y., in a neatly gotten-up catalogue, describe the automatic cut-off, throttling and compound engines built by them. These engines are built in six different styles, and are designed and well adapted to meet any requirements where a strong, smooth-running engine, with close regulation and good economy, is desired. A second catalogue deals with saw-mill machinery. An idea of the capacity of this firm may be had from the fact that they are prepared to build all the machinery necessary for a saw mill of any required capacity.

THE HILL MACHINE COMPANY of Anderson, Ind., have issued their catalogue for 1893, in which they make their steam artesian and deep-well pumping machinery the leading feature. The Hill pumping engine used for this purpose is vertical, and is placed immediately over the well with the water cylinder generally placed under the water. Full particulars are given both of the pumping engine and the outfit, with tables showing the duty to be expected according to the size of the

engine and the bore of the well. The company also manufacture the Deluge crank and fly-wheel boiler feeder, and improved direct-acting piston pump, duplex steam pumps, centrifugal pumps, a natural gas pumping engine operated by natural gas pressure, the Hill baby steam or natural gas engine, vertical tubular boilers, &c. The Hill baby engine is a very simple piece of machinery, at present made in one size, with 3-inch cylinder and 3-inch stroke, and adapted to running fans, sewing machines, churns and any other light work. Being operated by either steam or gas pressure, it has a special field of usefulness in the gas region.

JOHN MCLAUCHLAN, 59 Dearborn street, Chicago, Western manager of the Andrews Brothers Company, has issued a handsome leather-bound pocket catalogue of the specialties manufactured by his company. Three grades of bar iron are made, namely, standard common, bridge quality and B.B., or double refined. Bars are cold-straightened for shafting purposes. Hoop iron, horse-shoe bar, stay-bolt iron, small channels and angles, small iron rails and railroad car irons are also produced. The company's sheet mills make sheet iron and sheet steel of all gauges from Nos. 10 to 30, inclusive. Their blast furnace is run on Hazleton Scotch pig iron, a standard Ohio black band softener. The catalogue contains schedules of bar-iron extras, tables of weights of bars, weights of sheet and plate iron, and is illustrated with views of the works.

THE C. & C. ELECTRIC MOTOR COMPANY of New York have issued a handsomely illustrated pamphlet, in which they describe some of the most recent and important applications of electric-power transmission. In recommending electric power they call attention to the following considerations:

The saving of power otherwise lost in belting, shafting, gearing, &c. This is a very large item and increases rapidly with the size of the plant. It is in the large factory that the thoughtful mechanic is struck with the amount of power consumed in the never-ceasing rotation of the heavy pulleys, shafting and belting which first receives the power from the engine or water wheel; and in the moving of counter shafts, quarter turns and idlers, whose only office is to convey power on and on to the remoter part of the works. Here will be found, varying according to the character and arrangement of the factory, a loss of from 25 per cent. to 50 per cent. of the entire power generated and consumed in the factory.

Here it is that the great saving effected by the use of electric distribution is clearly shown. Under the old system the throwing on or off of small machines makes practically no impression upon the great moving mass of shafting. If a considerable number of machines should stop simultaneously and remain idle for a considerable time, the effect would gradually creep back to the engine, allowing the governor to cut off at shorter stroke, but the stoppages and variations alluded to do not as a rule occur simultaneously and for a considerable time, and so the great moving system grinds on, a card from the engine showing but slight variation.

With electric distribution the case is entirely different. The instant that a single machine is stopped or runs for a moment on a lighter part of its work the current supplying the motor is reduced and the effect is felt instantly at the cut-off of the engine through the dynamos. Steam is thereby saved and the demand upon the coal pile is lessened.

The economy thus effected is so great as to seem almost beyond belief. In large shops, where many machines are in continual use, the power used is constantly rising and falling, and it has been found to fall as low as 20 per cent. of the maximum during busy hours.

Another point worth noting is that, whereas the loss in shafting is practically constant for all loads, with electricity the loss in the wiring decreases with light loads. Thus, if a circuit is designed for a loss of 1 horse-power when carrying full load the loss will be only about ¼ horse-power at half load.

JONES & LOUGHLINS, LIMITED, Pittsburgh and Chicago, favor us with advance sheets of a manual which they now have in press, containing useful tables, formulæ and other information concerning steel construction, which will be found very useful by architects and engineers. The tables for steel plate girders give safe loads for clear spans of 14 to 38 feet; those for 15 to 9-inch beams, for distances between supports of 10 to 35 feet, and those for 8-inch beams and less for 5 to 25 feet. Channels and Larimer columns are also thoroughly covered.

MANUFACTURING.

Iron and Steel.

At a recent meeting of the stockholders of the Birmingham Rolling Mill Company, Birmingham, Ala., the old Board of Directors was re-elected, viz.: James G. Caldwell, W. W. Hite, Dr. Harvey, P. Dupont, Geo. W. Norton and W. M. Pratt, all of Louisville, Ky. Mr. Caldwell was chosent president and Mr. Dupont secretary. The question of removing the mill from Birmingham, which has been under consideration for some time, was brought before the meeting and discussed at length. It was decided informally to take no immediate steps toward removal, and the matter is now in abeyance. The rapid increase in the use of steel is the chief reason why a change of location is considered advisable. It is argued that on account of the high cost of bringing steel to Birmingham from the steel producing centers, and the small profit now obtained from puddling iron, the plant, which has always been a profitable one, would yield even better returns if located in one of the large steel-making districts. It is stated that a number of offers have been received from different cities, some of them advancing special inducements for the removal of the works.

Dispatches from Fort Payne, Ala., state that the Alabama Steel Works, a reorganization of the old Fort Payne Company, will at once commence the operation of a steel plant by the basic process that will have a capacity of about 60 tons of steel per day. It is stated that the sum of $20,000 has been provided for the purpose, and that the Fort Payne Furnace will be put into blast as soon as the steel plant is ready to begin operations.

McClure & Amsler of Pittsburgh are building four Massick & Crook hot blast stoves for the Rosena Furnace at New Castle, Pa., now undergoing repairs. The improvements under way at this furnace are extensive and will greatly facilitate the output and handling of material. Twelve flue boilers will replace the old cylinder boilers; the engine house will be extended 17 feet, and a new blast engine put in, making a total of four. The cast house will be extended 44 feet, and two side tracks put in for the East loading of material.

The trouble which threatened to result in a strike in the works of the American Tube & Iron Company, at Youngstown, Ohio, owing to a reduction of 10 per cent. in wages, has been amicably settled. It was agreed that a schedule of wages should be adopted in each department that would be the same as the wages paid for the same class of work in other mills of a like character throughout the country. It is stated that in many cases the wages will remain as they are at present, and in no instance where a reduction does occur will it amount to more than 5 per cent.

The Otis Steel Company, Limited, of Cleveland, Ohio, are preparing an exhibit for the World's Fair, showing some very intricate shapes made out of Otis Steel by the Avery Stamping Company of Cleveland, Ohio.

It is reported that the South Works of the Lackawanna Iron & Steel Company, Scranton, Pa., will start on double turn commencing April 1.

The furnace of the Wellman Iron & Steel Company, at Thurlow, Pa., is ready to blow in. During its idleness it has been thoroughly repaired, and in some respects remodeled.

The National Tube Works Company of McKeesport, Pa., have declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable April 1.

The Johnson Company of Johnstown, Pa., will make application for a charter of incorporation on April 13 next. The incorporators are Claude M. Johnson, John B. Hoefgen, Daniel Coolidge, William A. Donaldson, Tom L. Johnson, A. V. DuPont, A. J. Moxham and W. McLain.

It is reported that negotiations are in progress by which some capitalists of Philadelphia will purchase the old malleable iron plant at Youngstown, Ohio, and convert it into a works for the manufacture of tin and terne plates. It is stated that if the project is carried out, the Youngstown Stamping Company of Youngstown will handle considerable of the product.

The new mills of the Brown-Bonnell Iron Company, Youngstown, Ohio, consists of an 18-inch mill with an auxiliary mill at right angles with 22-inch diameter of rolls as a break down train for the 18-inch mill. This mill is a complete mill of itself, having four stands of rolls in the train, and can be run independently of auxiliary rolls. The works have also a 10-inch mill, and in connection therewith, a 16-inch breaking down train, and also a 10 inch auxiliary train of two sets of rolls, both at right angles with main train, which has seven sets of rolls in line, of which there are three sets of finishing rolls, and can be used as finishing rolls or otherwise as may be thought best. These mills are designed and erected on plans of John I. Williams' patent of 1883. The buildings are of iron of two main sections which are 220 x 60 feet, and connected by a cross section of 50 x 60 feet in which are placed the engines for driving the various mills. The buildings combined form like a letter H, with long legs of H for the cooling beds, shears, &c. In the shorter ends are placed four heating furnaces, two to each mill, which furnaces are built in connection with vertical tubular boilers (Cook's Patent) which will furnish a portion of the steam to run the mills, and are joined by a line 8 inches and 10-inch steam lines to the general steam arrangement throughout the entire plant.

The Millholland Tube Company of Reading, Pa., will shortly apply for a charter, the object being to manufacture seamless steel tubing especially adapted for bicycles under patents owned by the company. The capital will be $20,000.

In the courts at Pittsburgh last week the Pittsburgh Mfg. Company filed a bill in equity against the Pittsburgh Junction Railway Company and the Hainesworth Steel Company, asking for an injunction restraining the defendant company from taking possession of portions of Twenty-eighth street. It is claimed that the Hainesworth Steel Company secured permission from the city to extend the tracks of the Junction road along Twenty-eighth street to their works, and that they propose to lay the track across one corner of the plaintiff company's property.

M. M. Garland, president of the Amalgamated Association of Iron and Steel Workers, was in Youngstown, Ohio, on Saturday, the 25th inst., and organized a lodge composed of the finishers in the employ of the Union Iron & Steel Company of that city. It is claimed that the members of this new lodge formerly belonged to the National Union of Finishers, but have deserted that organization and returned to the ranks of the Amalgamated Association.

The crippled engine at Mattie Furnace, at Girard, Ohio, has been repaired and the plant is running full and turning out a large amount of iron.

The Valley Mill will resume operation in every department next Thursday. The amount of orders on hand makes the early start a necessity. Temporary repairs will be made on the part of the mill destroyed by fire, until the rush of orders decreases.

The new sheet and tin mills of the Falcon Iron & Nail Company of Niles, Ohio, will be completed so that the fires can be lighted the first week in April. All the machinery is in place and only trivial matters now require attention. The engines were tested on Thursday and found to work perfectly satisfactory. This mill will be one of the finest and most complete ones in the country.

Six furnaces in Sharpeville and three in Sharon, Pa., are now in operation and the Middlesex Furnace will resume in a short time.

An explosion occurred at the Alice Furnace, Sharpsville, last Wednesday by hot metal coming in contact with water. The stock house was partially burned.

The Stewart Iron Company's rolling mill at Sharon, Pa., took fire last Thursday night damaging the building to the extent of $2500. Insured.

The 18-inch and Belgian trains have started up at the Albany Iron Works, Troy N. Y. The Bessemer Steel Works are idle, owing to repairs being made to the converts. The merchant mill of the Burden Iron Works has resumed operations after a temporary suspension.

Machinery.

The plant of the Robert Mfg. Company, located on Smallman street, Pittsburgh, manufacturers of detachable steel link belting, sprocket wheels and shafting, was completely destroyed by fire. It is the intention of the concern to rebuild as soon as possible and on a larger scale than before.

The Pierpoint Boiler Company, a recently chartered concern of Pittsburgh, have opened offices in that city in rooms 56-58 Vandergrift Building. As before announced, it is the intention of this concern to put on the market a tubular boiler of new design. Julian Kennedy, the well-known mechanical engineer, is identified with this enterprise.

Among the novelties for which the Stark Machine & Tool Company, Buffalo, N. Y., are manufacturing dies and presses are Novelty soap powder holder for H. F. Stowell, Roches-

ter. N. Y.; Automatic garden sprinkler, R. G. Parks, Walla Walla, Wash.; improved refrigerator traps for Baldwin Refrigerator Company, Burlington, Vt.; ice cream freezer cups, Shepard Hardware Company, Buffalo, N. Y.; improved ice cream spoon, M. L. Schoch, Lewisburg, Pa.; Novelty tea pots for Aldrich & Ray, Buffalo, N. Y.; improved dinner bucket for Grier Bros. Co., Dubois, Pa.; improved dinner pail, Star Dinner Pail Company, Pittsburgh, Pa.

The Westinghouse Electric & Mfg. Company, Pittsburgh, have received a contract for furnishing 400 street-railway motors to the Atlantic Avenue Railway Company of Brooklyn. This is one of the largest contracts ever taken by the above concern.

The Milwaukee Boiler Company of Milwaukee, Wis., have acquired a parcel of land 305 x 345 feet in size, on which they will shortly erect a new plant at an expense, it is stated, of nearly $200,000.

It is stated that the Slater Engine Company, manufacturers of stationary steam engines, will build a new plant at Warren, Mass. It will consist of a machine shop, 250x50 feet, with monitor roof and electric traveling crane traversing the centre; a foundry 80x50 feet, and a boiler and engine house 30x30 feet.

The General Construction Company, successors to A. J. Sweeney & Sons, at Wheeling, West Va., have closed their foundry preparatory to the removal of the business of the company to Harvey, Ill. The machine shop is still running, but operations in all departments will be suspended at an early date.

The foundry of R. Garstong, at Alton, Ill., has been destroyed by fire.

The Economy Foundry Company were established at Syracuse, N. Y., about five years ago, and are now one of the most completely equipped concerns of their kind in that city. Their business has increased from an output of 5 tons per day the first year to about 25 tons per day during the past year. This increase of business has called for an enlargement of the plant to about twice its original size. In connection with a large amount of manufacture, specialties and general contract work, there are now in the shipping department 200 tons of castings made for the New York Central & Hudson River Railroad. A large part of the business of the company is out of town, principally in the East. In 1892 700 tons of castings were shipped to one concern.

The Lloyd Booth Company, Youngstown, are in receipt of an order from the Bellaire Nail Works for a special shear with automatic feeding table attached. It will be used to cut sheet, bar and skelp steel. The company are also receiving many orders for sand and chill rolls. The frame work for the new foundry is up and will in a short time be under cover.

The Enterprise Boiler Company, Youngstown, have shipped to Summers Bros & C. of Struthers, Ohio, a 125-horse power Adams boiler, and one of the same kind to the Westville Plate & Sheet Iron Company. They have received an order from the Falcon Iron and Nail Company of Niles for a 150-horse power Adams boiler. The Enterprise Company are now working on a large contract for the Rosena Furnace Company of New Castle.

William B. Pollock & Co. have received an order from the rolling mill at Durango, Mexico, for five of their largest boilers. They will be used in the mill.

Announcement is made that the business heretofore carried on under the name of the Weisel & Vilter Mfg. Company, at Milwaukee, Wis, will hereafter be conducted under the corporate name of the Vilter Mfg. Company, with the same officers. A new factory has been completed on a much larger scale than the one which was destroyed in the great conflagration of October, and it has been equipped with the most improved machinery. The company are builders of Corliss engines, pumps for all purposes, refrigerating and icemaking machinery, brewing outfits and bottling machinery, &c. Their trade in the past has been very extensive, covering not only all sections of the United States but also extending to many foreign countries. The new plant and general offices are located on Clinton street, between Beecher street and Lincoln avenue, on a tract of 6 acres, possessing excellent railroad facilities. A city office is also maintained at 93 West Water street for the convenience of patrons.

The Congdon Brake Shoe Company, iron and steel founders, at Fifty-ninth and Wallace streets, Chicago, have changed their name to the Sargent Company. The business established under the former name in 1876, which was confined at first to the introduction of the Congdon brake shoe, has developed into a general brake shoe and iron and steel castings business, so that the old name is now inapplicable. The new name which has been adopted carries with it the personality of the gentlemen who have made the concern prominent among iron and steel establishments. We are advised that they are now in the enjoyment of a large business in steel castings from railroad companies and manufacturers, in addition to the brake shoe business. Their iron foundry has also been kept running up to its full capacity the past year, rendering necessary the introduction of improved methods to secure a larger output.

The Barr Pumping Engine Company of Germantown Junction, Philadelphia, have just received an order for three compound duplex pressure pumps, 24 and 40 x 9 x 36, suitable for 1000 pounds pressure, from the Ohio Steel Company of Youngstown, Ohio, for their new plant.

The Cleveland Mechanical Stoker & Engineering Company of Cleveland, Ohio, have been incorporated, with a capital of $25,000, for the purpose of manufacturing and selling mechanical stokers and engines. The incorporators are: Alfred G. Hathaway, E. J. Leighton, Chas. Hathaway, Jr., Geo. A. Armington and Harvey D. Goulder.

The Stark Machine & Tool Company, Buffalo, N. Y., are just completing a complete outfit for the Victoria Mfg. Company, Fort Erie, Ont., for manufacturing the Ehle nestable dinner pail in Canada. This outfit consists of about 125 drawing, cutting, combinations and wiring dies, and six presses of various sizes. This plant, when finished, will probably be one of the most complete of its kind.

The Maddox Wire Belt Company of Cooperstown, N. Y., will soon begin manufacturing in the Hope Mill at that place.

The business of the American Fire Engine Company of Seneca Falls, N. Y., has increased so rapidly that it has been found necessary to enlarge the office. Plans have already been drawn for extending this part of the works and making it two stories high.

B. W. Payne & Sons of Elmira, N. Y., have a large number of orders to fill. They are building a 200 horse-power engine for the Metropolitan Railway Building, New York, two 200 horse-power engines and three 200 horse-power boilers for the Kingston (N. Y.) City Electric Railway; also two 150 horse-power boilers for the Fifth and Eighth Avenue Theaters, New York, and a boiler for the Miner Theater, Newark, N. J. They have another large order for boilers to fill, and the works are rushed to their full capacity.

The Bradford Belting Company of Cincinnati have recently completed what is claimed to be the largest belt ever made in this country or in the world. It will be used on the machinery of an electric railway in Brooklyn, N. Y. It is 6 feet wide, 116 feet long, and weighs 1800 pounds, and is to travel at the rate of a mile a minute.

The Bickford Drill Company, Cincinnati, Ohio, owing to the unprecedented demand for their upright drills, have found it necessary to double their manufacturing facilities. This will be accomplished by the erection of a large brick and iron structure immediately adjoining the present plant, which will be supplied with new and expensive machine tools especially adapted to the company's requirements. Sufficient orders, it is stated, are now booked to keep the present plant busy for the ensuing four months.

Dietz, Gary & Co., Cincinnati, Ohio, recently shipped a carload of their 22-inch engine lathe to their New York City agents, making the fifth shipment of like amount to the same point since January 1; and another carload is now being made ready for the same parties.

A. D. Quint, Hartford, Conn., manufacturer of turret drills, reports a steady increase in the demand for his special drill, which is designed to drill and tap without moving work or stopping the machine. Recently two of these machines were shipped to France and others to Germany. The drill will be exhibited in a desirable location in Machinery Hall, and will be shown in operation at the World's Columbian Fair.

The Voisard Steam Pump Company of Canton, Ohio, will remove their works to Louisville, a suburb of the former city, where they have been offered a building suitable to their purpose.

The entire plant of the Peck Mfg. Company, at Leeds, Sioux City, Iowa, consisting of the main building, 60 x 225 feet, blacksmith shop, 40 x 100 feet, and foundry, 40 x 80 feet, has been destroyed by fire. The loss is $58,000; insurance, $38,000. The company manufactured windmills and well-drilling machinery.

The capital stock of the Harrisburg Boiler & Mfg. Company of Harrisburg, Pa., has been increased from $100,000 to $200,000.

Work has begun on an annex to the plant of the Jones & Lamson Machine Company at Springfield, Vt. The new structure will be 162 x 60 feet in size, two stories high, and when completed the company's facilities will be doubled. The capital stock of the company has recently been increased from $60,000 to $100,000.

Miscellaneous.

The Stuart Fire Brick Company of Pittsburgh, with a capital of $20,000, were chartered last week. The directors are Asa P. Childs, jr., T. H. Childs, S. N. Kreider, A. J. Wurtz and W. H. Rea, all of Pittsburgh.

The William Cramp & Sons Ship and Engine Building Company of Philadelphia will erect three buildings on Beach street. They will be constructed mainly of iron, and will measure 77 x 200, 70 x 140 and 60 x 90 feet, respectively. The cost will be about $75,000.

The L. & N. R. R. Company have placed an order for 1200 cars with the United States Car Company of Anniston, Ala.

The Utica, N. Y., Tool Company, in New Hartford, N. Y., occupying the plant formerly occupied by the Lewis & Babcock Mfg. Company, are having their capacity tested on account of large orders. All kinds of agricultural implements are being manufactured. The officers of the company are: L. B Root, president; Russell Huntley of Ilion, vice-president; Chas. H. Philo of Washington Mills, treasurer; L. J. Lewis of New Hartford, secretary. These officers, with H. H. Babcock of Unadilla Forks, comprise the Board of Directors.

The plant of the Gleason & Bailey Fire Apparatus Company at Seneca Falls, N. Y., is to be enlarged and new machinery added.

The Board of Trustees of the Rodwell Manufacturing Company of Buffalo, N. Y., have called a special meeting for April 12 to consider the plan of increasing the capital stock from $125,000 to $250,000. If the plan is approved by the stockholders it is understood that the plant will be removed to Niagara Falls, N. Y. They also propose to acquire a large interest in the invention of Mr. Hausmann for the manufacture of art metal goods. It is said the company have practically decided on a site for a new plant at Niagara Falls.

James D. Cardell & Co. of North Penn Junction, Philadelphia, who make a specialty of pipe coils for ice machines, are completing, among other contracts, a large order for the Path Brewery of Philadelphia. The order covers 340 coils and consumes over 65,000 feet of pipe. Shipment will be commenced in a few days.

The Keystone Farm Machine Company of York, Pa., have just completed additions to their plant which will double their former capacity and furnish employment for about 135 hands.

Among recently authorized corporations in Illinois are the following: The Jackson Stove Mfg. Company, at Chicago; capital stock, 150,000; for the manufacture of stoves and fittings; incorporators, Thomas E. Paxton, C. E. Conway and L. L. Conway. The International Radiator Company, at Chicago; capital stock, $100,000; for the manufacture of materials for heating railroad cars with hot water and steam; incorporators, Charles Pfeifer, Joseph Shackelton and P. H. McCarthy. The Farquhar Heating Company, at Chicago; capital stock, $150,000; to conduct a general house-heating and manufacturing business; incorporators, Albert F. N. Hambleton, Milton J. Farquhar and Charles Loughridge. The Chicago Electric Headlight Company, at Chicago; capital stock, $200,000; for general manufacturing and to deal in electrical goods; incorporators, John T. Van Smith, Arthur Horton and Clarendo B. Eyer. The Elevator Safety Appliance Company, at Chicago; capital stock, $20,000; for the manufacture of elevator appliances and novelties; incorporators, Richard Robins, Henry L. Norton and John J. Hayes. Chicago Steel Company, at Chicago; capital stock, $100,000; for the manufacture of iron and steel; incorportors, Roswell H Buckingham, E. M. McKenney and A. Lehmann. Havana Metal Wheel Company, at Havana; capital stock, $15,000; for the manufacture of wheels; incorporators, Lewis E. Waterman, Harvey J. Phelps and Orland B. Thorp. The Electric Propeller Company, at Chicago; capital stock, $200,000; for the manufacture of electric propelling apparatus machinery; incorporators, William C. Marshall, David C. Kling and Louis C. Deproft.

A formidable strike in the Connellsville coke regions this spring is spoken of as probable. Not unlikely negro workers will be introduced if thought necessary.

Agricultural implements valued at $1,381,000 were exported from this country to the Argentine Republic last year.

TRADE REPORT.

Conflicting reports come to hand concerning sales of Bessemer Lake Ore at Cleveland. Our correspondent writes and telegraphs that no additional transactions of consequence have taken place, while in other quarters it is asserted that Pittsburgh and Shenango Valley furnacemen have purchased close upon a million tons in all at a shade under $4. All reports, however, agree that the two great consumers of Ore have not yet begun to cover their requirements.

In Pittsburgh the market for Bessemer Pig is a trifle easier. Buying has practically ceased, the great majority of consumers being well covered, while those who must buy confine their purchases to small quantities. The same is true of Billets, which are still held at $23, Pittsburgh. Buyers have attempted to cover in the Chicago district, unsuccessfully. As our Chicago correspondent reports, the Premier Company of Indianapolis has appeared on the scene as a seller. A large New England mill has covered requirements for some time to come, as reported from Boston.

Important factors in the scarcity of steel, such as it is, are the temporary idleness, for making improvements of one large mill each, in the Pittsburgh and Chicago districts. A further circumstance tending in the same direction is the activity of some of the Rail mills to roll out orders for spring delivery. Although the order books of the Rail mills are in the majority of cases far from being in good shape, they must deliver the bulk of what they have partly soon.

Although on the whole the volume of sales in Foundry Irons throughout the country is quite good, weak spots keep cropping up. Thus in Chicago there has been again some record breaking of prices on certain grades of Southern Iron.

Along the whole line of Manufactured Iron and Steel, some feeling of encouragement prevails, chiefly because of the feeling that the advance in Soft Steel must tell on the finished product. In view of the fact that the great majority of rolling mills bought their Steel before the rise began, it seems altogether too early to expect such a pleasing effect. As a matter of fact, prices of Finished Iron and Steel have not rallied anywhere in any line outside of the Wire and Nail trades. On the contrary, evidences of tremendous eagerness to capture orders continue to appear. A good many sellers must withdraw from the markets before a recovery is in sight.

The spring trade in Structural Iron and Steel is beginning to make its appearance slowly, but it is full of promise. Whether it will be large enough, later on, to justify a slightly higher level of prices remains to be seen. Possibly better figures for rush delivery may be secured.

In the Metal trades Copper continues to show an easing tendency, and the talk of heavy electrical requirements fails to stimulate buying in the face of an apparently very ample supply. The bulls in Tin are struggling hard to create a market upon which to unload. The flurry in Lead is over, leaving the metal quiet at an advanced price. There has been a little more activity in Roofing Tin Plates.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., March 28, 1893.

The market shows very little change from last week, although on the whole the feeling is probably a shade firmer. The continued firmness in Steel and in Steel Stock has a sympathetic influence on the general market, although as yet without developing any actual change in prices. The next ten or fifteen days ought to test the situation, but for the present consumers are not placing much reliance in higher prices. Purchases, therefore, while fairly liberal, are not in marked contrast with the supply, consequently prices remain about on the same level as they have been for some time past. On general principles one might be inclined to look for a slight advance all along the line, but that point has not been reached yet, and until it becomes an actual demonstration it will be very hard to convince consumers that the market is going higher. At the same time, while they are open to conviction, they are not inclined to give much aid in bringing it about. The advance in Bessemer, and in Steel stock generally, has not aroused any great enthusiasm, because they doubt if it can be maintained. Prices are higher on paper, but so far as this vicinity is concerned they are not higher on actual transactions, and nominal quotations do not make much impression. It is admitted that the market may take a sharp upward turn, but when urged to place orders the general reply is that "we will risk the delay; if prices are going higher we shall be entirely satisfied to pay the advance." It therefore simply resolves itself to a question of supply and demand, which at present are evenly balanced, with perhaps a slight tendency toward scarcity at the inside figures, but at every 10¢ or 15¢ ℔ ton beyond that there are evidences of an increasing desire to market liberal quantities.

Pig Iron.—Stocks of good Iron are in small compass, so that prices are steadily held and have a strong undertone. Consumers claim to be able to buy at concessions, but when it comes to a point they usually take their regular brands in preference to those that are nominally lower. It is inferred, therefore, that, quality considered, current quotations are about as low as they are likely to be, and that buyers are not inclined to experiment with new brands, unless at larger concessions than are now available. Several furnaces that furnish considerable Iron to this vicinity are temporarily out of blast, and as others are well sold up, there is an impression that it will result in a scarcity of good Irons after a while, and that in any event prices of such cannot be lower. Southern brands are not specially abundant, but at quoted rates there is sufficient for all present requirements, so that prices just about hold their own. In fact, the entire situation appears to be one of easy uniformity, whatever disparity there is being due to quality, necessity for realizing, or some feature not directly connected with the market. General quotations are about as follows for Philadelphia and equivalent deliveries, with 25¢ to 50¢ less on Southern brands at Harrisburg and intermediately to Baltimore:

American Scotch, No. 1X	$16 25	@	$16 75
American Scotch, No. 2X	15 25	@	15.75
Standard Penna. (Lake Ore), No. 1x	14.75	@	15.00
Standard Penna. (Lake Ore), No. 2x	14.00	@	14.25
Standard Virginia, No. 1x	14.50	@	14.75
Standard Virginia, No. 2x	13.75	@	14.00
Virginia and Southern, No. 1x. Soft	14.00	@	14.50
Virginia and Southern, No. 2x. Soft	13.25	@	13.50
Standard Penna. and Virginia Forge	13.00	@	13.25
Ordinary Forge	12.50	@	12.75

Freights.

Alabama Furnaces, Rail to Philadelphia	$4.31 @ .....
Alabama Furnaces, Rail and Water to Philadelphia	4.01 @ ....
Alabama Furnaces, Rail to Baltimore and Harrisburg	4.06 @ ....
Virginia Furnaces, Rail to Philadelphia	2.25 @ $2.75
Virginia Furnaces, Rail to Harrisburg	1.50 @ 2.00
Virginia Furnaces, Rail to Baltimore	1.75 @ 2.25

Bessemer and Low Phosphorus.—In conformity with advices from the West, the market is firm, but not higher and not very active, general quotations (delivered) being $15 @ $15 50 for Bessemer, part Cornwall Ores, $16 @ $16.25 for Standard Bessemer, and $17.50 @ $18 for Low Phosphorus, price varying according to quantity, delivery, &c.

Steel Billets.—Prices are materially higher on paper, but there has been very little business done in this vicinity since quotations crossed $24.50. It is not unlikely that buyers will have to give way ultimately, but at present they seem determined to take their chances; manufacturers are not pushing sales, on the ground that they have already all the business they need up to midsummer. Nominal prices are $25 @ $25.50, delivered, for Western and a trifle more for Eastern, but the difference is narrower than for some time past, local mills having declined much of the business that went West at low figures, leaving them in a relatively better position for new business.

Steel Rails.—Streets are in good demand, which is an important help to the mills during the absence of large orders from the railroads. Streets are quoted $32 @ $35 at mills, and standard Rails $29, f.o.b., with only a moderate demand for the latter.

Muck Bars.—There is a better feeling in this line owing to more inquiry and in sympathy with higher quotations on Steel. Asking prices are about $23, f.o.b. cars at mills, but it is not unlikely that accumulations at certain points would be realized on at concessions, providing the right kind of an offer was made.

Bars.—Demand improving, but no change in prices. Inquiries are for larger quantities, and apparently for quicker delivery than for some time past, and manufacturers are beginning to think that the outlook is decidedly better. But very few feel to be in a position to ask more money, so that business is chiefly at 1.62½¢ @ 1.67½¢, city delivery, and 1.55¢ @ 1.60¢ at interior points. Steel at same price as Iron, and from that to 1.75¢ @ 1.85¢ for extra quality.

Skelp.—Fair demand at last week's prices, and a fair amount of sales at 1 52½¢ @ 1.55¢, delivered, for Grooved.

Plates.—There is a good demand, and as mills have a great deal of work in hand there is a disposition to stiffen up on prices. Not that there is any general advance, but there is a closer adherence to quoted rates, and on some business more money is asked. The advance in Steel stock, if maintained, is likely to still further confirm this feeling, but confidence in higher prices is not very strong, and it will require a very active market to convince them that the time is ripe for better prices. Meanwhile, however, there is plenty of business, and sales are not hard to make at about the following prices, delivered:

	Iron.	Steel.
Tank Plates	1.80 @ 1.85¢	1.80 @ 1.85¢
Shell		2.10 @ 2.20¢
Flange	2.70 @ 2.90¢	2.25 @ 2.40¢
Fire Box	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities		3.25 @ 3.75¢

Structural Material.—There is a fairly good demand, but if prices are any criterion of the market, some of the mills must need business rather badly. Sales during

the past few days have been at extremely low figures, and on anything of importance, it would not be difficult to place an order at about the lowest figures ever quoted. There is nothing specially heavy on the market, the only order in this vicinity having been for several hundred tons of Beams, for the Franklin Sugar Refinery, which was taken by the Pottsville Iron & Steel Company. General quotations (delivered) are about as follows: Beams, Channels or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.80¢ @ 1.85¢; Universal Plates, 1.80¢ @ 1.90¢.

Sheets.—There is plenty of business to be had, but prices are so low that it is impossible to meet competition and furnish anything like a reasonably good quality. There is some demand for best qualities, nevertheless, for which general quotations are given as follows:

Best Refined, Nos. 14 to 20	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26	3.15¢ @ 3.20¢
Best Refined, No. 27	3.30¢ @ 3.40¢
Best Refined, No. 28	3.40¢ @ 3.50¢
Common, ¼¢ less than the above.	

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than here named:

Best Soft Steel, Nos. 14 to 16	2½¢ @ 2¾¢
Best Soft Steel, Nos. 18 to 20	2⅝¢ @ 3¢
Best Soft Steel, Nos. 21 to 24	3⅛¢ @ 3¼¢
Best Soft Steel, Nos. 25 to 26	3⅜¢ @ 3⅝¢
Best Soft Steel, Nos. 27 to 28	3⅝¢ @ 3¾¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount	70 and 5 % @ 70 and 10 %

Old Material.—The market is dull, so that no large amount of business can be done, unless at a slight shading in prices. Steel stock sells pretty freely, but Iron is inclined to weaken, as there is a full supply and only a very light demand. Asking prices are about as follows: Old Iron Rails, $18 @ $18.50, delivered; Old Street Rails, $19 @ $19 50; Old Steel Rails, $15 @ $16; No. 1 Railroad Scrap, $15 @ $16, Philadelphia, or for deliveries at mills in the interior, $16 @ $16.50, according to distance and quality; $8 @ $9 for clean new No. 2 Light Scrap; $7.50 for old No. 2 Light Scrap; $11.50 @ $12 for Machinery Scrap; $12 @ $12.25 for Wrought Turnings; $8 for Cast Borings, and nominally $22 for Old Fish Plates, and $13 @ $14 for Old Car Wheels.

Wrought-Iron Pipe.—It is useless to quote discounts on such a market as the present, as everything depends on the character of the order and the amount of competition necessary to secure it. The demand is said to be a trifle better, Boiler Tubes being in good request, but there is quite a scarcity of some sizes.

The Pulaski Iron Company's furnace, at Pulaski, Va., was recently blown out after a succesful run of two years and a half, during which time 95,000 tons of metal were produced. The company have no Iron on the furnace banks, but have orders on their books for 8000 tons, which they hope to commence delivering in about six weeks' time. Relining and general repairs will be pushed as rapidly as possible, and it is hoped that everything will be ready for the blast early in May.

J. Tatnall Lea & Co. will remove their offices from the Wood Building, Fourth and Chestnut streets, to 125 South Fourth street. This is one of the most convenient locations in Philadelphia, and after the first of the month they expect to be in good shape to receive their friends at the location named. Morris, Wheeler & Co. will also remove their down-town office, and after the first of the month will take possession of the offices now occupied by J. Tatnall Lea & Co.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, March 29, 1893.

The Iron market here is in a mixed condition. The volume of business is steadily increasing and the outlook for further trade brightens as the spring advances. A more confident tone pervades business circles generally, and some notable instances of advanced prices are reported, and yet at the same time there are sellers at very low rates, showing that some concerns are still exceedingly anxious for business. It is possible that the good volume of trade may in time enable these weak brethren to get in better condition. But as some withdraw others are ready to take their place. The advances in raw material made at Pittsburgh are looked upon as the most encouraging feature of the situation, and have played an important part in contributing to the better feeling.

Pig Iron.—Quite a good business has been done the past week in local Coke Iron. Buyers appear to have gained more confidence in the stability of prices and little difficulty is now found in getting advance of say 25¢ ℔ ton as compared with rates current a couple of weeks since. The situation would be very much better if it were not for the low price now being quoted by Southern producers. Soft Irons are in pretty good demand, but sales have been made at the lowest rates ever known here and there seems to be no immediate prospect of an advance. Southern Foundry grades appear to be in greater supply than Soft Irons and, if anything, are a little weaker, and special efforts have been made to push sales. Consumers realize that they have a golden opportunity in being able to buy at the rates now prevalent, and it is likely that the next few weeks will see a great deal of business in this direction. Southern makers, however, are not disposed to sell at these terms on very long deliveries. Lake Superior Charcoal is in some demand, but only in small lots. Large consumers are deferring their purchases until later in the year. There is as yet very little doing in Iron Ore here and it is probable that not much will be done in this line for two or three weeks. We revise our quotations as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	$16.50 @ $17.00
Local Coke Foundry, No. 1	13.75 @ 14.25
Local Coke Foundry, No. 2	13.00 @ 13.25
Local Coke Foundry, No. 3	12.75 @ 13.00
Local Scotch	14.00 @ 15.00
Ohio Strong Softeners	16.00 @ 16.50
Southern Silvery, No. 1	@ 15.00
Southern Silvery, No. 2	@ 14.50
Southern Coke, No. 2	13.00 @ 13.35
Southern Coke, No. 3	12.60 @ 12.75
Southern, No. 1, Soft	13.00 @ 13.35
Southern, No. 2, Soft	12.60 @ 12.75
Southern Gray Forge	12.25 @ 12.35
Tennessee Charcoal, No. 1	16.50 @ 17.50
Alabama Car Wheel	@ 18.85
Coke Bessemer	14.50 @ 15.00
Hocking Valley, No. 1	16.75 @ 17.00
Jackson County Silvery	16.75 @ 17.00

Bars.—Large transactions have taken place in Bar Iron since last report. Competition for this business has been keen, but the successful sellers claim that prices realized are better than they had reason to expect under the circumstances. Wagon makers have been the heaviest buyers recently. Car builders are making very little stir in the market. The lowest sellers are now the nearby mills that do not make a general assortment. The consequence is that the lowest prices now being named are on such sizes as they are able to make. The standard mills are much firmer. The Mahoning Valley makers claim to be obtaining 1.42½¢ at mill, half extras, while some of them are standing at 1.45¢. They report a considerable business in other directions at these figures. Prices here still range from 1.55¢ to 1.57½¢, half extras, on straight Bar orders. A reduction of 2¢ ℔ 100 on freight rates from Eastern points goes into effect on April 1. Soft Steel Bars are very steady at 1.65¢, Chicago, upward, the market being considerably stronger on account of the advance in Steel Billets. Store prices are unchanged at 1.70¢ @ 1.80¢ for Bar Iron and 1.75¢ @ 1.85¢ for Soft Steel Bars.

Structural Material.—The contract for Beams for the Medinah Temple, covering about 1000 tons, was secured by the Illinois Steel Company. Other large contracts are in such shape here and outside the city that a better feeling may soon be produced among manufacturers, based partly on good prospects for heavy business and partly on the advancing price of raw material. Quotations on mill orders, Chicago delivery, are as follows: Beams, 1.95¢ @ 2.10¢; Angles, 1.85¢ @ 1.95¢; Universal Plates, 1.90¢ @ 1.95¢.

Plates.—Orders for mill shipments have not been numerous, but an improvement is noted in the demand from store, making the volume of business for the week very fair. Quotations on mill shipment, Chicago delivery, are as follows, for carload lots: Tank Steel, 1.85¢ @ 1.95¢; Shell Steel, 2.10¢ @ 2.15¢; Flange Steel, 2.25¢ @ 2.30¢; Ordinary Fire Box, 3.50¢. Store prices continue as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.25¢ @ 2.40¢; Shell, 2.40¢ @ 2.60¢; Flange Steel, 2.70¢ @ 2.90¢. Boiler Tubes are quoted nominally at 70 %, but concessions are made from this price according to the specification.

Sheets.—A continued good business is reported in Light Sheets and the mills seem to be fitting up with work from this section and from others, so that prices are being held very firmly. Quotations on Common Black Sheets in carloads are unchanged at 2.85¢, Chicago, for No. 27. A heavy trade is in progress in Galvanized Iron from both mill and store, but no improvement has been made in prices, which are 70 and 10 % discount on Juniata from mill and 70 and 5 % for small lots from stock. Sheet copper is steady at 30 % off in small lots.

Merchant Steel.—No change is noted in this branch of trade, the volume of business the past week having been quite fair for the season. We continue quotations at 2¢ @ 2.20¢, Chicago, for mill shipments of Open-Hearth Machinery and Spring Steel; Bessemer Tire, 1.67½¢, with Bar Iron extras; Tool Steel, 6¢ @ 7¢ for ordinary and 12¢ upward for specials.

Billets and Rods.—Good inquiries are coming forward from local consumers for both Billets and Wire Rods, but manufacturers are not in position to quote and contracts are going eastward. The Premier Steel Company of Indianapolis are now manufacturing Billets and have taken a number of good orders. Two new Wire mills are about ready to start in the West and are either in the market for Rods or soon will be.

Rails and Track Supplies.—The Steel Rail trade is still confined to small transactions. The outlook for Rails is regarded as very good, but manufacturers would like to see contracts coming forward with a little more freedom. They quote $30 @ $32, according to quantity. Iron and Steel Splice Bars are unchanged at 1.65¢ @ 1.70¢; Track Bolts with Hexagon Nuts, 2.60¢ @ 2.65¢; Spikes, 2¢ @ 2.10¢.

Old Rails and Car Wheels.—Old Iron Rails very quiet. Dealers quote them nominally at $18, but at the same time find holders not disposed to part with them at that price. Old Steel Rails are very dull at $11.25 @ $15, according to length. Old Car Wheels are a little easier and quotations are now made of $14 50 @ $14.75.

Scrap.—A fair business is doing in all kinds of Scrap, but especially in Cast. Old Axles have been sold in considerable quantities at $21. A choice lot of passenger car Axles brought $22. Not much is doing at present in shipments eastward on account of the freight discriminations. Dealers continue to quote as follows per net ton: No. 1 Forge, $15; No. 1 Mill, $10.50; Sheet Iron, $6; Pipes and Flues, $10; Axles, $21; Horseshoes, $15.50; Fish Plates, $16 50. Spikes and Bolts, $14.50; Cast Borings, $5.50; Wrought Turnings, $8; Axle Turnings, $9.50; Heavy Cast, $11.50; Stove Plate, $8.50 @ $9; Malleable Cast $9; Mixed Steel, $10 @ $10.50, gross ton; Leaf Steel, $17.75.

Metals.—Copper is unchanged at 12¼¢ for carload lots of Lake and 11⅜¢ for casting brands. Spelter is steady at 4.05¢, with a little more asked for futures. In Pig Lead the improvement noted last week continues. Trade generally is in much better shape and dealers look for a large demand at increased prices, though with possibly a little weakness at times. Sales of some 500 tons have been made here at 3.75¢, and a small lot at 3 80¢. Consumers have filled their immediate requirements and are now looking on. At the close prices are firm at 3.80¢, asked.

A. H. Dunham & Co., 1001 Monadnock Building, Chicago, announce that the firm of Dunham, Keedy & Co. have been dissolved on account of misunderstandings and differences in opinion between partners, and that a new firm has been organized under the above name, which will represent the same furnace companies as selling agents for Lake Superior Charcoal, Southern and Lake Superior Cokes, Ohio Scotch and High-Silicon Silvery Pig.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, March 29, 1893.

There has been some increase in the volume of business in Pig Iron during the week, and the general tone of the market is more confident; prices are not any higher for Southern Iron for immediate delivery, but there is less disposition to sell for long forward delivery, except at an advance of 25¢ ℔ ton; and, in fact, the leading furnaces discourage such orders, for they anticipate that Iron will be worth more money when the time of delivery arrives. There have been sales of several lots of 1000 tons for short forward delivery, as well as numerous carload lots, and buyers insist upon prompt delivery, for it is evident that they are leaving a narrow margin in purchasing over their present necessities, and stocks in consumers' hands are reduced to the lowest terms. The largest sale was 5000 tons of Gray Forge at $8.25, f.o.b. Birmingham, deliverable in equal quantities each month for five months. Small lots of this grade are selling at $8 for immediate shipment. Mottled Iron is in light supply and is difficult to buy for any less than Gray Forge. The foundries in this district appear to be full of work, and the melting of Iron in the aggregate is apparently larger than it was a year ago. There is not much Charcoal Iron selling, but there is a good demand for No. 2 and No. 1 Foundry Iron. The sales for the week aggregate about 25,000 tons of all kinds of Iron. Many of the Southern furnaces are sold so far ahead that they will take no more orders for early delivery. Quotations unchanged.

Foundry.

Southern Coke, No. 1	$13.25 @ $13.50
Southern Coke, No. 2	12.00 @ 12.25
Southern Coke, No. 3	11.25 @ 11.50
Ohio Soft Stone Coal, No. 1	16.00 @ 16.25
Ohio Soft Stone Coal, No. 2	15.00 @ 15.25
Mahoning and Shenango Valley	14.75 @ 15.00
Hanging Rock Charcoal, No. 1	19.00 @ 19.25
Hanging Rock Charcoal, No. 2	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 1	15.50 @ 15.75
Tennessee and Alabama Charcoal, No. 2	14.50 @ 14.75

Forge.

Gray Forge	10.75 @ 11.00
Mottled Neutral Coke	10.50 @ 10.75

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	18.00 @ 19.00
Lake Superior Car Wheel and Malleable	17.75 @ 18.00

St. Louis.

(By Telegraph.)

Office of *The Iron Age*, Bank of Commerce Building, ST. LOUIS, March 29, 1893.

Pig Iron.—The condition of the Iron trade is practically the same as last reported. The market is not active, and yet there is a fair amount of business doing at prices as quoted below. There are some furnacemen who refuse to meet some of the prices named below, principally No. 2 Foundry and Gray Forge, but the prices we quote are practically the market, as the majority of furnaces are selling at these figures. Buyers are not disposed to purchase very far ahead, and are limiting their purchases for delivery during the next 60 to 90 days. Consumers are all busy, and the volume of business is in excess of last year. Prices of Pig Iron, however, continue to go lower, and everyone connected with the trade has given up trying to predict when the change toward higher prices will be felt. We quote as follows for cash, f.o.b. cars Birmingham:

Southern Coke, No. 1 Foundry,	$13 50 @ $14.00
Southern Coke, No. 2 Foundry,	12.25 @ 12.50
Southern Coke, No. 3 Foundry,	11 75 @ 12 00
Southern Gray Forge	11 25 @ 11 50
Southern Car Wheel	18.00 @ 18.75
Lake Superior Car Wheel	17.00 @ 17.50
Ohio Softeners	16.25 @ 17.00
Missouri Charcoal, No. 1 Foundry	13.50 @ 14.00

Bar Iron.—The demand for Bar Iron continues to be moderately heavy. Some mills report an extremely brisk demand. Car builders are kept busy and are heavy buyers of Bar Iron. Prices are well maintained at 1.57½¢ @1.60¢, half extras, f.o.b. cars East St. Louis. Jobbers ask 1.70¢ @ 1.75¢, according to quantity.

Barb Wire.—Mills report an active and increasing demand, and state they are unable to fill orders already on their books. Prices have been advanced to $2.20 for carload lots of Painted to jobbers, which price, however, would be shaded on desirable orders. Galvanized is quoted at $2.60.

Wire Nails.—A heavy trade is reported in Wire Nails, and mills and jobbers alike are having about all they can do in this direction. Prices are being well maintained at $1.70 for carload lots to jobbers.

Pig Lead.—An active demand is noted for Pig Lead, and prices are firmly maintained at from 3.80¢ to 3 82½¢ for prompt deliveries. There is not much doing in the way of orders for future delivery, as the impression prevails among producers that the market is certain to be higher in the next 30 to 60 days. There is no surplus stock on hand, and a higher range of prices would not be surprising.

Spelter.—This metal does not appear to have any friends. There is some talk of a consolidation of the Spelter interests with the view of advancing prices but the matter has not at this writing assumed tangible form. The demand is light at from 3 95¢ @ 4¢ for April or May deliveries.

Freight Rates.

Pig Iron.	Per ton.
Birmingham, Ala., to St. Louis	$3.25
Chattanooga, Tenn., to St. Louis	3.00
Sheffield, Ala. to St. Louis	2.80

Barb Wire and Wire Nails.	Per cwt.
Pittsburgh, Pa., to St. Louis	22¢
Cleveland, Ohio, to St. Louis	18¢
Anderson, Ohio, to St. Louis	14¢

Cleveland.

CLEVELAND, OHIO, March 27, 1893

The Iron Ore market has not really opened, although a good many quotations are being made on the quiet. Up to date not over 200,000 tons of Ore have been sold, and substantially all of this amount has been Bessemer Ore. The boom in Bessemer Iron seems to have come to a sudden termination, and the Ore men are no longer talking of $4.25 @ $4.50, f.o.b. cars Cleveland, for Bessemer Ore. Instead, it is given out that good Bessemers can soon be bought for the price named in *The Iron Age*, editorially, several weeks ago—$3.85 ℔ ton. This may not be accomplished, but there seems little likelihood of prices for Bessemer Ore exceeding $4 ℔ ton, except for special grades needed for contract work. The 127,000 tons that it is claimed were bought by Ries of Newcastle does not seem to have really opened the market. King, Gilbert & Warner of Columbus are also said to have bought some Ore, but while this report is affirmed in one office it is denied in another. It seems probable, however, that some negotiations have been going on and that the basis of speculation has been $4 ℔ ton for Norrie Ore, f.o.b. cars Cleveland, Ashtabula and Fairport. It cannot be said that the Ore market has really opened. The sales to date seem to be only incidental to the approaching boom in the market. So much non Bessemer Ore remains unsold on the docks that it is not unlikely that for a few weeks the demand will be principally for Bessemer Ore. During the past week a sale of non-Bessemer Ore was reported, but the price given out—$3.40 ℔ ton—was so thoroughly out of harmony with the general condition of the market that the sale was generally discredited. Ore men, to-day, look for some substantial sales within the next week or two, but hesitate about talking of prices and lake freights. If the vesselmen would only promulgate their ultimatum all would be well. Just at present the vessel owners are talking of a $1.25 rate from the head of Lake Superior, when it is apparent that the owners of the big Ore carriers would gladly accept $1.15 for season contracts, and possibly $1.05 or $1.10 ℔ ton from Ashland and Two Harbors. Agents of the old mines do not anticipate very serious competition from the Mesabi mines this season and assert that the only sale of consequence to date has been made to a firm interested in the Bewabic Mine of that range.

Iron Ore.—During the week 34,000 tons of Ore were sent forward to the furnaces against 29.000 tons for the same week in 1892. A few sales of Bessemer Ore, heaped up on the docks, at $3.10, f.o.b., cars Cleveland, are reported, but the market is rather dull. Interest centers in the controversy now going on over vessel rates, and it is stoutly intimated that charters could be obtained to day on the basis of $1.15 from Ashland. One of the heaviest Ore dealers in the city said, to-day, that his company's supply of Bessemer Ore on the docks did not exceed 2300 tons, and that 20,000 tons would be a liberal estimate of the total amount of unsold Bessemer Ore. Manufacturers of Mill Iron do not seem to be reaching out for non-Bassemers with much avidity, and until they do there is little prospect of any extensive work in getting out these cheaper Ores. The Foundry Irons will partially supply this deficiency, but non Bessemer Ores seem likely to rule somewhat low in the market this year.

Pig Iron.—The market seems to be in practically the same condition noted a week ago. The price has crept up to about $14.15 ℔ ton, and there it seems likely to remain. While this is substantially an advance of $1 ℔ ton over the quotations of three weeks ago, the boom seems to have halted and two or three furnacemen are to-day asking: "Where are we at?" An Iron dealer representing one of the largest firms in the Mahoning Valley said to-day: "The supply of Bessemer Iron on hand to-day would supply the country just 10 days, no more, no less." In the face of this fact it is asserted and reasserted that the boom for Bessemer Iron has reached its limit. Gray Forge is fairly firm and Foundry Irons have also strengthened.

Scrap.—The market continues dull, with this schedule of quotations: No. 1 Railroad Wrought, $15 ℔ ton; Cast Scrap, $11 ℔ ton; Wrought Turnings, $10 ℔ ton; Cast Borings, $7 ℔ ton.

Old Rails.—The demand is only fair. A large quantity of Old Americans were offered this week at $19.50.

Old Wheels.—A sale of a small quantity of Old Wheels at $14 is reported.

Muck Bar.—The demand is light and prices are given out as $14.25 @ $14.50, Cleveland.

Barb Wire.—A large number of orders have been received during the past week, and the market is in excellent shape. The mills are overcrowded with orders.

Nails.—Wire Nails are in good demand at $1.50 ℔ keg in carload lots, and are very firm at this figure. For smaller orders $1 55 @ $1.60 ℔ keg is asked.

(*By Telegraph.*)

No new sales of Ore of any consequence are reported, although buyers have been testing the market and if assured of the exact cost of transportation would probably buy liberally. The fact has become pretty well established that good Bessemer Ores can be secured for $3.90 ℔ ton, f.o.b. cars lower lake ports, and while $4 will be generally understood as the minimum price the former figure will form the basis of many transactions. The Bessemer Iron market is fairly firm, but the demand is not brisk. Muck Bars are a trifle weaker.

Boston.

Office of *The Iron Age*, 146 Franklin St., BOSTON, March 28, 1893.

Pig Iron.—There is rather more than a fair trade in Pig Iron. The foundry people are very busy, and they require a good deal of Iron. This they buy as they need it, marking a good volume of trade. Prospects are also good that this volume of business will be increased as the season progresses. But the offerings of Iron are known to be large, and the tendency is in the buyer's favor. The quotations on Southern Iron are slightly easier at: No. 1, $15 @ $15.50; No. 2, $14 @ $15; No. 3, $13.50 @ $14. These prices are for Iron laid down in Boston. Virginia Iron, which is quite a prominent feature in this market, is steady at from 25¢ to 50¢ ℔ ton higher prices than Alabama Iron. Some Pennsylvania Iron has to be had by the foundry people, for the purpose of keeping their castings up to the required standard, but beyond this Iron for mixing the demand for Pennsylvania Iron in New England is rather small. Quotations are unchanged at the following figures, for Iron at shipping port: No. 1, $15 @ $15.50; No. 2, $14.50 @ $15; Gray Forge, $13.50. Other Western Irons are steady, with the quotations at $17 @ $19, for Iron laid down here, according to quality.

Bar Iron.—The Bar Iron market is quiet, and yet there is a fair trade from store, with something in the way of orders. Mr. Warr's rolling mill at Wareham was expected to start up on Monday, but there was some hitch which put off the starting a few days longer. But it is well understood that the mill will start up and run long enough to run out the stock at least and put it into the finished product, for which product the mill has a good many orders. How much longer, if any, the mill will run it is now not possible to tell. Bars are in steady quotations at: Ordinary Old Material Bars, from mill, 1 60¢ @ 1.65¢; from store, 1 65¢ @ 1.70¢. The best known Bars from puddled Iron are quoted at 1.85¢ @ 1.95¢ from mill, from store, 2.20¢ @ 2¼¢. There are no changes to note in Norway and Swedish Irons. There are no Irons of this class coming in, while the store trade is quiet, with the market quoted at $65 @ $67 ℔ ton for Bars and Shapes.

Steel, Steel Plates and Steel Rails.—The strength of the market on Billets is the principal feature in the Manufactured Steel market. One of the largest concerns using Billets in this part of the country has just placed an order for a large lot of Billets, and though the transaction is at strictly private terms, yet enough is known to make it certain that at least $1.50 ℔ ton was paid over the price of a month ago. A prominent concern positively refuses to book orders for its agents here on 4 inch Billets for less than $23, f.o.b. at Pittsburgh. This advance is expected to influence the market on Manufactured Steel sooner or later, but at present quotations are at: Bessemer Steel, 2.05¢ @ 2.20¢; Machinery, 2¢ @ 2.15¢; Tire and Sleigh Shoe, 2¢ @ 2 10¢; American Cast, 7¢ @ 7½¢; English Cast, 13¢ @ 15¢. American Steel Rails are still quoted at $29 at mill, but business is quiet. It is understood in the trade that the Steel Rail combination expires by limitation somewhere between April 1 and 10, and that there is at least one large concern which will refuse to come into another combination. It is suggested that the buyers of Rails are holding off to see what the result of such a position will be. Steel Plates are the most affected by the stronger position of Billets, and two of the representatives of large concerns here have been obliged to withdraw quotations on Plates. For this reason the Plate market is firmer, with quotations higher at: Tank, 1.95¢ @ 2¢; Shell, 2.05¢ @ 2.10¢; Flange, 2¼¢ @ 2.35¢; Fire Box, 2.60¢ @ 3.30¢.

Building Iron.—There is a good demand for Building Iron. Contracts have been placed for some 400 tons of Beams and Channels the past week, but otherwise schedules known to be out covering some 1500 tons more are yet unplaced. Another instance is noted where plans have called for extremely long and heavy hard pine Beams, but where architects have granted permission for the substitution of Steel Beams. This is a direct result of the Boston fire, and it evidently means a good deal to the Iron and Steel trade. The quotations on Building Iron are steady at: Beams and Channels, 2 10¢ @ 2.20¢ from mill; from store, 2¼¢ @ 3¢; Angles, 2¢ @ 2.10¢ from mill; from store, 2¼¢ @ 2½¢; Tees, 2.40 @ 2½¢ from mill; from store, 2½¢ @ 2¾¢.

Nails.—Nails continue to improve in demand, with Cut Nails quotable at $1.50 ℔ keg on large lots and at $1.60 on small lots. The list of extras is the same on Wire Nails as on Cut Nails. The test of the relative holding qualities of Wire and Cut Nails is about ready for publication. The Cut Nail people say that the results are to be extremely favorable to them; in some instances the drawing qualities being greater in Cut Nails by 50 %.

Scrap.—This Iron is in rather better movement, and better prices are the result, though the improvement is slight. Ordinary No. 1 Wrought is quotable at 50¢ @ 60¢ ℔ 100, according to location and quality. Some of the mills are paying 60¢ for Scrap delivered. Old Horseshoes and special selections of Scrap are quotable at 60¢ @ 70¢, according to quality and location.

Bullard & Post, 125 Milk street, Boston, announce that they have just been appointed sole New England agents of the Carbon Steel Company of Pittsburgh, Pa. This with the accounts of Jones & Laughlin, Limited, and J. Painter & Sons Company, which they have had for some time, places them in good position to handle a large and diversified business.

Pittsburgh.

(*By Mail.*)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, March 28, 1893.

Ferromanganese.—The improvement in demand noted last week continues, and, as a result, prices are somewhat firmer. The market is strong at $59, while $59.25, Pittsburgh, has been obtained recently for small lots.

Muck Bars—The market is very dull, and has not as yet shown much indication of improving either in demand or prices. While $24.25 has been the ruling price here for some time for Muck Bars of best grades, it is intimated that this price is being shaded for desirable orders.

Plates.—The past week was a quiet one, no contracts of special importance coming to the surface. While a fairly large volume of business is going, the large capacity for production has the effect of keeping competition very active, and buyers benefit from this in the way of having their orders accepted at very close prices. While the market is reported as firm at prices quoted below, there is nothing in the situation at this time that would warrant the statement that an advance in prices in the near future is likely to come. A considerable amount of business for delivery in Western territory, and also a fair amount for shipment to Eastern points is being taken by Pittsburgh mills at this time. We continue to quote Ordinary Fire Box at 2.25¢ @ 2.50¢; Best Quality, 3¢ @ 3.25¢; Flange, 1 95¢ @ 2.05¢; Tank, 1.65¢ @ 1.70¢; Shell, 1 75¢ @ 1.85¢; Universal Plates, 1.70¢ @ 1 75¢.

Steel Rails.—There is nothing new in this department to report this week. A moderate amount of business is going and makers claim that the outlook is encouraging. Prices are unchanged at $29 for standard sections, f.o.b. cars at mill. Edgar Thomson is on Rails this week.

Wire and Cut Nails.—In all probability a meeting of Western Wire Nail manufacturers will be held in Cleveland early in April, when it is expected prices will be advanced to $1.55 base, in carload lots. There continues to be much activity among the mills, principally on old orders booked before the recent advances came, but a moderate amount of new business is coming in right along, for which mills are obtaining the established price. We continue to quote Wire Nails in large blocks to jobbers at $1.50, while to the smaller trade jobbers claim to be getting $1.55 in carload lots and $1.60 in less quantities. A number of mills are so situated that they are not anxious to book any additional business until some of the orders they now have on hand have been filled. In Cut Nails the demand continues to improve and considerable business was done during the past week. As we have before an-

nounced, the new card is not being strictly observed, the claim being made that some mills have recently booked orders at slightly less than $1.15 base, which is 10¢ less than the card price. For ordinary lots card rates are being obtained, but for desirable orders more or less shading is being done.

Merchant Bars.—While there has been a fair increase in volume of business, the amount of material wanted continues to be considerably less than the capacity of the mills, and as a result there is more or less cutting of prices still going on. Makers believe, however, that April will be a good month and will bring a much heavier demand. We quote Steel Bars at 1.55¢, half extras, Pittsburgh. For very desirable orders, 1.50¢ would be accepted. Mills in the Mahoning Valley are moderately well employed, but as yet there has not been that improvement in prices that manufacturers expected. We continue to quote Bars in the Valley at 1.45¢, half extras, with a probability that this price would be slightly shaded for a very desirable order.

Wire.—The demand continues as heavy as ever and within the past week there have been further slight advances in prices of both Plain and Galvanized. We now quote Galvanized Barb Wire at $2.55 in carload lots, and Painted Barb Wire at $2.15 in carload lots, with the usual advances for less quantities. Even at the above favorable prices some mills are not in position to take any additional orders, and have been compelled to decline business within the past week or two. The demand for Plain Wire is also very heavy and a slight advance in prices has occurred. We now quote Nos. 6 to 9 at 1.70¢ in carload lots and 1.75¢ in less quantities. Nos. 10 and 11, 1.80¢, and 12 and 12½, 1.90¢; No. 12, 2¢ and No. 14, 2.15¢.

Skelp Iron.—Demand is quiet and prices show considerable range, according to size and desirability of orders. For ordinary business we quote Grooved Skelp at 1.50¢ @ 1.52½¢; Sheared at 1.70¢ @ 1.72½¢, four months, or 2 % off for cash The above prices continue to be shaded under special conditions.

Wire Rods.—Notwithstanding the increased cost of Billets, there has not been that improvement in Rods which makers expected. While it is true that demand has improved to some extent, the old quotation of $30 at mill still prevails.

Structural Material.—The demand for the various kinds of Structural Material is fairly satisfactory, but makers believe that next month will show a considerable increase in tonnage. The weather for the past few weeks has been very much against outside work, and this has delayed contracts which otherwise would have been placed. The outlook for a heavy volume of business is reported as satisfactory, but the impression prevails that with the active competition coming from large capacity, it is not likely that prices will show any material improvement. For ordinary lots we quote: Beams and Channels, at 1.80¢ @ 1.90¢, Pittsburgh; Angles, 1.65¢ @ 1.70¢; Z Bars, 1.85¢ @ 1.90¢, and Tees, 1.95¢ @ 2¢. These prices continue to be shaded for desirable business.

Sheets.—While nearly all large buyers have placed their season contracts, there continues to be a large amount of new business coming in, and as a rule mills are well employed and running to full capacity. The demand for light Sheets is particularly heavy, some makers having their output of this class of material sold up for the next two or three months. Prices are being firmly maintained, and, on account of the increased cost of Steel, slightly better prices for Soft Steel Sheets are being obtained. For ordinary Box Annealed Sheets we quote as follows: No. 24, 2.45¢ @ 2.50¢; No. 26, 2.55¢ @ 2.60¢; No. 27, 2.65¢ @ 2.70¢. On account of increased cost of Steel, Soft Steel Sheets are bringing slightly better prices, and makers are charging for this product about $2 ℔ ton advance on above quotations.

Connellsville Coke.—For the week ending March 18 there were 12,850 ovens in the Connellsville region in blast and 4470 idle, the production for the week being 126,554 tons. Prices on Furnace Coke are ranging from $1.60 to $1.70, with $1 60 as the ruling price. For desirable contracts $1.50 is being named. Foundry coke is selling at $2.15 to dealers and $2.30 to consumers.

(*By Telegraph*, 12.30, *March* 29.)

Pig Iron.—For the week under review the amount of Bessemer Pig changing hands was considerably less than for the preceding week. This was due principally to the fact that buyers have covered their immediate requirements, while those who have not bought very largely ahead are buying in small lots and taking their chances on the future of the market. The heavy sales of Bessemer made during the past month have placed consumers in a better position as regards supply, and the scarcity of prompt Iron has disappeared to some extent. One of the largest consumers in this district, who bought very largely within the past month or six weeks, is reported as having asked some of the shippers to defer shipment for a time, and this will place some Iron on the market that otherwise would not have been available. The closing of the Duquesne plant for a month or six weeks will decrease consumption materially during the time the plant is off. Prices during the week were maintained on a basis of $14, Pittsburgh, with several buyers claiming to have been offered Bessemer at $13.90, Pittsburgh. We quote as follows:

Neutral Gray Forge	$12.25 @	cash.
All-Ore Mill	12.50 @	"
No. 1 Foundry	13.75 @ $14.00	"
No. 2 Foundry	12.75 @ 13.00,	"
Charcoal Foundry No. 1	17.00 @ 18.00,	"
Charcoal Foundry No. 2	16.50 @ 17.00,	"
Bessemer Pig	13.90 @ 14.00,	"

We note three sales of Bessemer, aggregating 2300 tons, for April and May shipment, at $14, Pittsburgh.

Billets.—The market is in the same condition as noted last week. Steel for prompt shipment continues scarce and is bringing $23 at maker's mill, with buyers confining their purchases to small lots for immediate requirements. One concern that was on the market for a good-sized block of Steel for April, May and June shipment, are reported as having offered close to $23 at maker's mill, but the offer was declined. As before stated, makers in Pittsburgh and Wheeling have their product largely sold ahead for the next two or three months, and nearly all the Steel available for April and May is in the hands of dealers and brokers. As to the future of the market, the impression continues to prevail that present prices will be maintained and, if spring trade is as heavy as expected, higher prices for April and May are not improbable. In one day last week there was turned out at the Edgar Thomson Works about 1200 tons of Billets.

Freights.

Between Pittsburgh and	Group 1. Per ton.	Group 2. Per ton.
Mahoning Valley, Shenango Valley & Wheeling, W. Va.	$0.60	$0.75
Steubenville, Ohio	.50	.65
McKeesport, Pa	.30	.30
Braddock, Pa	.30	.35
Dunbar, Pa	.60	.75
Kittanning, Pa	.50	.55
Johnstown, Pa	.75	.80

From Pittsburgh, Beaver Falls, Homestead, Rankin, Braddock and McKeesport to	Group 1.	Group 2.
Albany, N. Y.	$2.30	$2.60
Baltimore, Md.	1.70	2.00
Boston, Mass.	2.70	3.00
Buffalo, N. Y	1.25	1 25
Findlay, Ohio	1.75	1 75
New York City, N. Y.	2.30	2.60
Oswego, N. Y.	2.30	2.60
Philadelphia, Pa	1.90	2.20
Rochester, N. Y.	1.80	2.00
Syracuse, N. Y.	2.30	2.60
Utica, N. Y.	2.30	2.60

Rates shown under head of Group 1 will apply on Pig Iron, Mill Cinder and Scale, per gross ton, in carloads of 12 gross tons and over.

Rates shown under head of Group 2 will apply on Billets (Iron or Steel), Blooms (Iron or Steel), Borings (Iron or Steel), Chain Irons (in coils), Crop Ends (Iron or Steel), Ingots (Iron or Steel), Muck or Puddle Bars, Old Car Wheels and Axles, Old Rails, Scrap Iron, Scrap Steel, Scrap Tin, Slabs, unfinished (Iron or Steel), and Wire Rods (in coils), per gross ton, and on Ingot Molds and Cast Iron Pipe per net ton, in carloads of 12 tons, net or gross, and over.

The offices of the Lockhart Iron & Steel Company, manufacturers of Iron and Steel Bars, have been removed from the Bank of Commerce Building, Pittsburgh, to their works at Chartiers Station on the P. & L. E. R. R.

Baltimore.

BALTIMORE, March 27, 1893.

Too much good fortune is said to turn the heads of some people, and the past week has been but another demonstration of this, for prices on some grades of Iron and Steel products have been named which a year ago would have caused a manufacturer to hold up his hands in holy horror and predict the speedy closing up of any plant which would accept orders at such prices. There is a good deal of the holding up of hands even now, but it is generally one hand only that is held up—the other one reaches for the order. Plates and Tubes have suffered most by the grasping for orders desirable and undesirable. It is time to stop and think when we hear of Marine Steel sold in less than carload lots at considerably less than 2.25¢, delivered at consumers' shop. The demand has held out from our last report and Machinery Steel has brightened up considerably. One Pittsburgh manufacturer has offered round Machinery Steel for turning into shafting at a less price than is quoted openly for Bessemer Steel or Iron. It is doubtful if there has been for years past as much building as will be done the coming summer here, and not only will the number of buildings be greater, but the quality will be better.

Bar Iron.—We have not had any further price cutting brought to our notice since last week. Some mills are talking of advancing prices somewhat, but while Western mills still continue to sell the quality of Iron they do at the prices now quoted, nothing will be done in that line. We

quote from mill 1.75¢ @ 1.80¢; from stock 1.80¢ @ 2¢.

Plates.—Any quotation made now will be subject to the desire of the mills quoting for orders. As stated elsewhere, extremely low prices have been named—in fact, a Pittsburgh mill has instructed its representative to inform its customers that they will beat any price quoted on Marine Steel. An Eastern mill has made the same statement, but included all grades of Plate therein. Open quotations are made here that we think it not policy to name and therefore refrain from quoting this week.

Merchant Steel.—A greater quantity of business has been placed during the last week than for some time, and greater confidence is felt. We quote Machinery Steel at 2.15¢ @ 2.25¢; Tire Steel, 2.25¢ @ 2.30¢; Spring, 2.50¢ @ 2.60¢; Toe Calk, 2.30¢ @ 2.40¢.

Tubes and Pipe.—The market has been quiet and but few orders in the field, and heretofore conservative manufacturers running after them, granting concessions in terms and discounts which would a year ago have affected their credit. Discounts are nominally 70 %, all sizes, new list, from mill, 65 % off from stock.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, March 29, 1893.

Pig Iron.—The week has been uneventful, no movement of any consequence having taken place. We quote Northern brands at $14 50 @ $15.25 for No. 1; $13 75 @ $14.50 for No. 2, $12.75 @ $13.50 for Gray Forge, tidewater. Southern Iron, same delivery, $14.25 @ $14 75 for No. 1; $13.25 @ $13.75 for No. 2 and No. 1 Soft; $12.25 @ $12.50 for Gray Forge.

Ferromanganese and Spiegeleisen.—The lowest figure now named for Ferromanganese is $57, the majority of sellers asking higher prices. Foreign at present cannot compete at points west of the Alleghenies, except on the strength of quality. There seems to be an increasing demand for Silico Spiegel, of course only in small lots. Metal carrying 9 to 10 % of silicon and 18 to 20 % of manganese is quoted at $36.50, tidewater. Nothing has been done in Spiegeleisen, which we quote $25.25 @ $25.50, nominally.

Billets and Rods.—The market is very quiet, but stronger on Billets, a moderate lot having been sold by a mill tributary to this market at a price equivalent to $24.75, New York. There has also been an inquiry for 500 tons of Blooms for the Pacific Coast. Rods and Swedish material are dull. We quote Steel Billets, tidewater, $25 @ $25.25; foreign, $29 @ $29.50; Wire Rods, $32.50 @ $32.75; foreign Wire Rods, $40 @ $40.50, and Swedish Rods, $52.50 @ $53.

Steel Rails.—Sales during the week in this market have been confined to a total of about 3500 tons, which includes 1500 tons for the elevated road. One large order for 100 lb Rails now in the market will probably be divided by the three Eastern mills. At a conference of four of the mills in Philadelphia last week, the question of allotments was informally discussed. We quote $29, mill or tidewater, for Standard Rails and $32 @ $33 for Girder Rails.

Track Material.—Spikes are quoted at 1.90¢ @ 1 95¢; Fish Plates at 1.55¢ @ 1.60¢; Track Bolts, square nuts, at 2.45¢ @ 2.50¢, and hexagon nuts at 2.55¢ @ 2.60¢, delivered.

Manufactured Iron and Steel.—Manufacturers and merchants report quite a satisfactory aggregate of business in small lots, but no large business has been closed. The bids for the bridge over the Harlem Ship Canal have been opened, but have not been decided upon at this writing. Figures for the structural work of the Kuhn, Loeb & Co. office building will be opened this week. A number of other structures will be placed at an early date. We quote: Beams up to 15-inch 2¢ @ 2.15¢; 20-inch, 2.35¢ @ 2.40¢ for round lots; Angles, 1.8¢ @ 2¢; Universal Mill Plates, 1.85¢ @ 1.90¢; Tees, 2.10¢ @ 2.30¢; Channels, 2.10¢ @ 2.20¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.80¢ @ 2¢ for Tank; 2.10¢ @ 2.25¢ for Shell; 2.25¢ @ 2.50¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.65¢ @ 1.9¢, on dock, and common 1.55¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.80¢ @ 1.90¢, delivered; Cotton Ties, 80¢ ℔ bundle, at mill.

Merchant Steel.— The market is dull, with Machinery at 1.75¢ @ 2¢; Toe Calk, 2¢ @ 2.25¢; and Sleigh Shoe, 1.75¢ @ 1.90¢.

Old Material.—We quote nominally $16 50 @ $17 for Old Iron Rails; $13 @ $13.50 for Old Steel Rails; $15.75 @ $16 for No. 1 Scrap, and $12.50 @ $13 for Old Car Wheels, f.o.b. Jersey City.

Metal Market.

Copper.—All the strong points that have been brought forward of late in the shape of reduced output of Copper, and prospective increase in the demand, seem to be barren of anticipated results. In any event, the larger demand is extremely slow about materializing, while the offering is strongly suggestive of some anxiety on the part of sellers. Certain it is that 11⅛¢ has become a common selling price for Lake Superior Ingot and that business has been effected "on the quiet" at a shade less in more than a few instances. In fact, 11⅛¢ would appear to be very close to current market value for spot or near future deliveries. Speculators have offered August delivery at as low as 10½¢, without result in the way of attracting custom from any quarter. Casting Copper is not offered with the same persistency, but the fact has been brought out very plainly that buyers for round lots have only to bid 10½¢ to be accommodated, although the nominal quotations are 10⅝¢ @ 11¢ for ordinary quantities. Taken as a whole, the market seems to be disappointing and not without signs that the intended effect of reduced production in this country and Europe is, for the present at least, offset by the indifference of buyers. The possibilities for a large demand for Copper for electrical purposes exist, but, like other prospective outlets, this turns out to be rather disappointing up to the present time, and it is only in sporadic cases where immediate delivery was involved that sellers have secured the nominal quotations.

Pig Tin.—The finest work engineered by the "bulls" in the speculative arena to sustain or advance prices has been ineffective. As a matter of fact, the weight of heavy supplies seems to have outbalanced manipulation as a factor in regulating prices, and the outlook is shrouded with more doubt than it has been at any time since the McKinley duty boom was started in motion. Surface appearances are that distributors and consumers have been rather hasty and that the burden of heavy stocks on spot and about and afloat has become a little wearisome. Certain it is that the premium on spot stock has disappeared in this market, although nominally about £3 ℔ ton in London. April contracts are fully 15¢ ℔ 100 lb lower here at the present time than they were a week ago and 10 ton or larger lots have been offered in the interior as well as here at that reduction, without stimulating business. The Banca and Billiton sales in Holland realized prices somewhat below previous valuation and indicated that Continental as well as English markets are somewhat unsettled.

Pig Lead.—Some sales were made early in the week at 4 05¢ for good-sized lots and 4.07½¢ for single carloads, but the market has become quieter, and, with the turn in demand, there is some softening of values. That is to say, sellers at 4.05¢ are more numerous now than were buyers at that time, while the demand is extremely tame. It is not clear that supplies at primary points are heavier, but the offering for last half of April and later shipment is freer, indicating that prospects are favorable for a liberal supply of metal in the near future.

Spelter.—Ten car loads or more of Western Spelter have been sold for early shipment at about 4.30¢, delivered in the East. The demand has slackened during the past few days, however, and sellers are now more numerous than buyers at that price. Nothing new has come to light regarding the proposed combination of producers, and at present negotiations for sale of Spelter are carried on as though nothing of the kind had been contemplated.

Antimony.—Dealings have been moderate and prices are without radical change although rather soft. Current quotations are 10¢ @ 10¼¢ for Hallett's, 10¼¢ @ 10½¢ for LX and 10½¢ @ 10⅝¢ for Cookson's.

Tin Plate.—In roofing sizes of Terne Plates there has been rather more business, but not enough to have any decided bearing upon values. Otherwise the market has presented a tame appearance and orders for both prompt and future deliveries have been filled at practically the same prices that ruled a week ago. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., scarce; Bessemer full weight, scarce; light weights, $5.12½ for 100 lb, $5 for 95 lb, $4.90 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60 @ $5.65; Siemens Steel, IC basis, $5.75; IX basis, $6.85. Charcoals—Melyn grade, IC, scarce; Crosses, $8; Allaway grade, IC, $5.70; Crosses, $7; Grange grade, IC, $5.80; Crosses, $7.10. Charcoal Ternes—Worcester, 14 x 20, $5.70; do., 20 x 28, $11.35; M. F., 14 x 20, $7.25; do., 20 x 28, $14.50; Dean grade, 14 x 20, $5.30 @ $5.37½; do., 20 x 28, $10.50 @ $10.70; D. R. D. grade, 14 x 20, $5.20; do., 20 x 28, $10.30; Dyffryn, 14 x 20, $5.50; do., 20 x 28, scarce. Wasters—S. T. P. grade, 14 x 20, $5; do., 20 x 28 $9.70; Abercarne grade, 14 x 20, $4.95; do., 20 x 28, $9.50. Black Plates for tinning are quoted at $3.65 @ $3 70 for IX, and $3.70 @ $3.75 for IC, to arrive.

Coal Market.

The Anthracite Coal trade is slumpy and weak, notwithstanding the lower schedule of prices, and there are signs of growing dissatisfaction with the general management, some of the operators thinking that on the part of a prominent leader at the agents' meeting there is too much dictation, which may result in open warfare, perhaps, within a month. The independent coal miners are said to derive considerable advantage from their opportunity. It is certain that there is some cutting—that nobody, in fact, expects to realize more than $4 for Stove, though

the schedule says $4.15, and other sizes are shaded in proportion. Pea and Buck wheat are scarce and firm. Operators deny that the new schedule is received with satisfaction, claiming that, on the contrary, it excites discontent and invites demoralization. The best that can be said is that the market absorbs a fair amount of Coal, but a period of continued weakness is not improbable as the spring advances, even if accompanied by activity. Respecting lower railroad tolls, the Philadelphia *Ledger* says that if the rate of tolls from the Schuylkill region is made $1.70, the rate from the Lehigh will be fixed at $1.75, and from the Wyoming district $1.80. The total shipments to market for the week ending March 18 was 766,126 tons, compared with 574,037 tons in the corresponding week last year, and for the year to that date, compared with the corresponding period of 1892, there is an increase of 368,570 tons.

Financial.

There is no special animation in business circles, due mainly to questions concerning the currency, though a tempestuous March and bad roads, interfering with the ordinary course of trade, have had much influence. Conjectures recently rife respecting the possibility of gold going to a premium are at least temporarily dismissed, the supposition being that the United States Treasury is no longer embarrassed by a lack of gold, the foreign demand having diminished, while bankers in all parts of the country readily surrender gold in exchange for notes. Henry Clews says: "The large outflow of currency to the West and other points which came so unexpectedly has suddenly abated, and the indications now are that, so soon as we have turned April 1, money will flow back to this center in considerable volume. Borrowers, therefore, feel assured that, so far as concerns the local money market, it is now only a matter of bridging over for the next two weeks; which is an assurance worth much as a contribution toward confidence." The fact is recognized, however, that the causes of the recent gold drain are still operative, and are liable to become intensified, should there be no improvement in foreign trade conditions and no definite prospect that the accumulation of silver shall cease. With low rates of interest in Europe foreign capitalists have no motive for withdrawing their investments from this side so long as confidence is not disturbed. A special feature this week has been a fall in the price of bar silver in London to 37 $\frac{9}{16}$ pence ℔ ounce, the lowest on record, caused by rumors that the Indian Government will close the mints against silver. Two notable events closely related to business interests are the decisions rendered by Judges R cks and Billings, of Toledo and New Orleans respectively, the former holding that railway employees and railway officials are alike amenable to law and cannot sacrifice public interests in seeking their own advancement, while the latter discusses fully the rights of labor unions and finds that the merchants in New Orleans who asked for injunctions against combinations in restraint of trade are entitled to them.

The stock market was naturally stagnant after the recent excitement, but the tendency was toward improvement, chiefly on account of easier money. After a fall in New England, Sugar and Reading, the market was active and generally higher. On Friday the whole list was strong and Reading was especially affected by news that arrangements had been made which would enable the company to meet its most pressing obligations. On Saturday the reported arrangement between the Treasury and London bankers with reference to a loan had a favorable influence, and after the bank statement appeared the market became strong. The Chicago terminal railroads report largely increased earnings from west-bound freight. On Monday there was very little news to influence the speculation. Reading was affected by the refusal of the receivers to permit an examination of the books, and the selling of this stock naturally depressed New England. The latter was somewhat favorably influenced by a statement that the directors will provide for a permanent retirement of the floating debt. The fact that the European markets will be closed until Tuesday contributed to the slowness of the movement. Sugar was inclined to be strong on an advance in the price of the refined product. The news from Nashville indicates that the excitement regarding the condition of the banks in that city was subsiding.

United States bonds were quoted as follows:

U. S. 4½s, 1891, extended	99½
U. S. 4s, 1907, registered	112½
U. S. 4s, 1907, coupon	113½
U. S. currency 6s	105

Money was easy, there being liberal offers by bankers and institutions, but who were satisfied only with long contracts, and in some instances would accept only gold notes as security. The quoted rate for all dates was 6 %. Commercial paper was dull, the city banks being out of the market, and the out-of-town inquiry was for choice lots at high rates. The bank return showed a gain of $2 589,900 in cash, and of $3,204,075 in surplus reserve, which item now stands at $9,243,200.

Exchange was firmer at an advance to $4.87 for long and $4.89 for short, in consequence of easier money and a scarcity of bills. Gold exports amounted to $500,000 and further engagements were reported. The common feeling was that the Treasury would maintain the *statu quo* until the meeting of Congress. In Chicago the demand for money was much reduced.

The settlement of the cotton strike in England and the coal miners' strike in the Monongahela Valley had little effect, except as the former event caused a decline of several points in cotton quotations, due to heavy selling orders telegraphed from the South to Liverpool. Spot cotton was steady with a good export demand. Coffee was dull and slow. Coal was weak and irregular, and there were indications of dissatisfaction with trade managers. Sugar was stronger and advanced all round. Dry goods jobbers report that the condition of the market and of manufacturing are the best witnessed in many years. The mills of every description are full of orders. Wheat declined between 1¢ and 2¢ ℔ bushel, with nearly a corresponding reduction in value of corn and oats. Pork products were also lower.

John H. Inman of New York is reputed to have bought 25,000 shares of stock of the Tennessee Coal, Iron & Railroad Company under 25, from H. F. de Bardeleben, and is said to have offered to take 25,000 shares in addition at the same price, H. F. de Bardeleben still holding about 40,000 shares. Report has it that at the annual meeting early in April, J. H. Inman will become president and H. F. de Bardeleben managing director.

Government papers in the Dominion profess to have no hope that a commercial convention for mutual preferential trade will take place between Canada and the United States, New England alone being favorable to such a measure, but they recognize in the political situation possibilities that some of the advantages of a reciprocity treaty may be secured to the two countries in the ordinary course of domestic legislation.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, March 29, 1893.

In the Iron trade there has been very little change and the general market remains quiet. The only new feature is slightly more inquiry for Cleveland Iron for shipment to the Continent. Warrant speculation has continued very slow. Late dealings were at 40/9½ for Scotch, 34/4½ for Cleveland and 45/7½ for Hematites. Last returns from public stores noted a total of 343,000 tons Scotch and 58,000 tons Cleveland Pig on hand.

The Pig Tin market has been inactive. Prices for prompt and April delivery are firmly held, but futures still offer at more or less considerable discount, without stimulating business. Absence of encouraging news from America operates to check speculation.

The Copper market has been quiet, but prices have ruled very steady in the face of "bear" tactics on the part of some prominent operators. The most of the available Copper is very firmly held. Demand for home consumption is quieter and Indian inquiry is smaller, owing to the condition of the silver market.

Oil sizes of Coke Tin Plates continue in very fair demand for prompt delivery, but otherwise the call is very moderate. Futures are neglected, buyers being unwilling to pay the advance on Cokes that has been asked since the rise in cost of Tin Bars. The demand for higher prices restricts business.

Scotch Pig Iron.—The market remains quiet, and, while slightly irregular, prices show but little change.

No. 1 Coltness,	f.o.b. Glasgow		54/
No. 1 Summerlee,	"	"	49/6
No. 1 Gartsherrie,	"	"	47 6
No. 1 Langloan,	"	"	53/
No. 1 Carnbroe,	"	"	43/6
No. 1 Shotts	"	at Leith	53/
No. 1 Glengarnock,	"	Ardrossan	48.6
No. 1 Dalmellington,	"	"	46 6
No. 1 Eglinton,	"	"	44/

Steamer freights, Glasgow to New York, 2 6; Liverpool to New York, 7/6.

Cleveland Pig.—Business rather quiet, but prices steady at 34/3, f.o.b. shipping port, for No. 3 Middlesborough.

Bessemer Pig.—Demand very slow and prices barely steady, at 47/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Ferromanganese.—A slow business passing and the demand moderate. English 80% quoted at £10. 15/, f.o.b. shipping port.

Steel Rails.—No improvement in the demand and prices rather soft. Heavy sections quoted at £4, f.o.b. shipping port.

Steel Slabs.—Market very quiet and prices without change. Bessemer quoted at £4, f.o.b. at shipping point.

Steel Billets.—Demand slow but holders firm on prices. Bessemer, 2½ x 2½ inches, quoted at £4 2/6, f.o.b. shipping point.

Steel Blooms.—Very quiet market and prices unchanged. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Old Iron Rails.—Slow business and no movement in prices. Tees quoted at £2. 7/6 @ £2. 10/ and Double Heads at £2. 10/ @ £2. 12/6, f.o.b.

Scrap Iron.—Prices steady, but market very quiet. Heavy Wrought Iron quoted at £2, f.o.b.

Crop Ends.—The market remains dull and unchanged. Bessemer quoted at £2. 7/6 @ £2. 10/, f.o.b.

Manufactured Iron.—Orders moderate and coming in slowly. Prices still favor the buyer. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ordinary Marked Bars	8	0	0	@	.....		
" Common "	6	5	0	@	6	7	6
Staff. Bl'k Sheet, singles....	7	7	6	@	7	10	0
Welsh Bars (f.o.b. Wales)....	5	7	6	@	5	10	0

Tin Plate.—Market closes quiet but firm. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	13/6 @ 14/0
IC Bessemer Steel, Coke finish	12/0 @ 12/3
IC Siemens " " "	12/3 @ 12/6
IC Coke, B. V. grade 14 x 20	12/0 @ ....
Charcoal Terne, Dean grade	13/6 @ 14/

Pig Tin.—Market firm at the close, but quiet. Straits quoted at £94. 17/6 for spot and £91. 10/ for three months' futures.

Copper.—No change at the close. Merchant Bars quoted at £45. 5/ spot, and £45. 12/6, three months' futures. Best selected, £49. 10/.

Lead.—The market has been quiet, but prices remain quite steady at £9. 15/ for Soft Spanish.

Spelter.—Demand moderate and prices soft at £17. 5/ for ordinary Silesian.

Proposed Bridge Over the English Channel.

Plans for the bridge which it is proposed to build across the English Channel have been finally decided upon. The bridge, if constructed, will stretch from Cape Blanc-Nez in France, to the South Foreland in England, a distance of 20.8 English miles. The plan is to build it of steel on the cantilever principle, the piers being 73 in number, and the spans arranged alternately in distances of 1312 feet and 1640 feet. Exhaustive surveys and experiments have demonstrated that the actual building of the bridge, so far as the foundations and construction of the piers are concerned, is perfectly feasible. The greatest depth on the line is 165 feet, with a chalk bottom, but the average depth is not more than 118 felt below low water. The masonry will be carried to a hight of 46 feet above the highest tides, and will be surmounted by steel columns upon which will rest the main girders of the bridge. Of the alternate spans, the shorter—of 1312 feet—will consist of two cantilevers, each equal to 656 feet and meeting at the center of the span. The longer, of a total span of 1640 feet, will comprise two cantilevers, each equal to 615 feet, and a central girder 410 feet long. The most serious objection offered to the construction of such a bridge is that it would gravely interfere with navigation. This is met by the promoters in saying that the platform of the structure will be carried to a hight of 200 feet above the level of low water; that the piers will be lined in the most favorable position to suit tidal currents and the sweep of the waves; and that the proportion between the closed and open portions of the tideway will be as 1 to 20. For rough and foggy weather, it is proposed to establish a most elaborate system of fog-horns and illuminated signals to guard against danger to navigation. It is stated that there will be no difficulty in ships clearing the piers in calm, fine weather; but unfortunately such a condition of the elements is more the exception than the rule in that part of the English Channel. It only remains to be mentioned that the estimated weight of steel that would be required to make the bridge is 755,000 tons, and the estimated cost of construction no less than $157,154,000. Whether the bridge will be built as at present planned, or whether it will ever be built at all, are questions that are not yet definitely decided. International and political questions enter into the matter, which will have great effect in promoting or crushing the enterprise, as circumstances may develop. But the fact remains that the project as planned has been pronounced perfectly feasible by the highest engineering authorities in Europe, including the Society of Civil Engineers in Paris and the British Iron and Steel Institute, that a company, entitled the Channel Bridge & Railway Company, Limited, have been registered in London to carry it out, and that great encouragement has been received by them in the condition of public feeling on both sides of the Channel, which appears favorable to any scheme for ameliorating the present condition of communication between Great Britain and the Continent. The alternative scheme—the Channel Tunnel—has experienced an unfortunate setback by a Government injunction being put on the works. It remains to be seen whether the bridge scheme will be similarly treated. Should it be carried out it will be the most stupendous work of its kind yet undertaken

The plans are the joint production of Messrs. Schneider and Hersent of France and Sir John Fowler and Sir Benjamin Baker of England.

The trip of W. R. Walkley, New York manager of the Peck, Stow & Wilcox Company, and A. R. Treadway, vice president of the same corporation, in charge of the Cleveland factory, to Havana, Cuba, as alluded to recently in our columns, has been accomplished. Some of Mr. Walkley's friends facetiously intimate that he felt in need of recuperation from the labor of preparing the poem so well received at the late Hardware dinner. They left New York, March 15, on the steamer "City of Washington," of the Ward line, and returned by the same boat, encountering a rough passage both ways, arriving here March 28. Among their experiences was a call at a representative Hardware store, where they were hospitably invited to partake of breakfast. It appears to be quite a universal custom for employers in almost all branches of trade to board their employees on the premises, rooms included. The majority of merchants and clerks are said to be Spaniards, and being away from home and without family ties, this custom has obtained. Business is commenced about 6 o'clock in the morning, breakfast being served at 10 a.m. This meal, which was a fair sample, consisted of five courses, including wines, mainly claret and sour wine. The repast is described as having been excellent. The host referred to his wine bill per annum as averaging about $3000, 30 bottles being served at that meal. Dinner occurs about 6 p.m. Among the mementoes of the trip are a few fine cigars, for special acquaintances who call early.

Legal questions have arisen between the builders of the whaleback steamers and the "Sou" Railway people because the two purchased and paid for in part fell 250 tons short of the 3000 tons capacity which had been guaranteed.

The Defects Found in Finished Tin Plates.

BY JOHN BROMILOW, PITTSBURGH, PA.

The defects found in finished tin plates are of three kinds—viz, surface defects, black spots and rust spots. The causes of these are not, to the writer's knowledge, scientifically determined and known throughout the trade. The surface defects and black spots are undoubtedly caused by refractory matter other than the oxide of iron forming the scale and which, when reheated and rolled, adheres to the surface in the process of rolling and is not sufficiently soluble to be removed by the action of the acid while the sheets are being pickled. The particles of matter thus left adhering to the surface of the black plates are most probably silicate of iron taken up from the heating furnace or floor of the mill and rolled on to the surface of the bars or plates in the mills.

When not removed in the pickling they form laminæ on the iron or steel plates that will not alloy with the melted tin and produce the defects named, which are found in the plates when being assorted.

Tin plate bars containing a large percentage of sulphur have a tendency to produce these defects. On the other hand, if the tin plate bars are made from good soft iron or mild steel of suitable quality a light, feathery scale is produced on the surface of the bars when being rolled that requires very little force for its removal; in fact, a slight disturbance of the atmosphere or a shaking of the bar is sufficient.

Various methods have been adopted in English practice for cleaning the scale from tin-plate bars while being rolled or immediately afterward, such as scraping the bars, playing water on them and plunging the bars after being cut to length and while still red hot into cold water. According to the experience of the writer, bars made from good materials, if not overheated in the mill furnace, will practically clean themselves from scale in the process of rolling. This remark in a great measure applies to all iron or steel rolled in a mill after being heated.

Rust spots found on tin plates apparently originate from a different source. They are found on the surface of the plates in the first instance as little starry specks, through which the moisture can penetrate and oxidize the iron beneath. From experiments made by the late Mr. Bank, the principal of the Pontymister Tin Plate Works, it was found that the rust spots on tin plates were caused by bad workmanship, and in consequence defective tinning, the real cause being a difference in the temperature of the two metals when suddenly exposed to the atmosphere. The tin at the time being too hot, the sudden contraction of the thin coating of tin when so exposed causes it to leave the iron plates and to form the small holes found on their surface, through which the moisture can reach the surface and cause it to rust.

It is stated that during this summer experiments will be made at Standard plant of the H. C. Frick Coke Company in the Connellsville region looking to the utilization of the smoke from the ovens as a fuel for making steam. The experiments are to be made under the direction of Robert Ramsey, superintendent of the Standard shaft.

McMillan Bros., manufacturers of stoves, Fayetteville, N. C., propose to build an iron warehouse, and desire to correspond with contractors.

HARDWARE.

Condition of Trade.

OUR REPORTS WITH SUBSTANTIAL unanimity refer to the volume of business as very satisfactory, and in some lines, among which Heavy Hardware and seasonable specialties may be mentioned, is especially active. With the advance of the season there is a general quickening in the demand, which has, however, been retarded somewhat by severe weather. Retailers are evidently placing orders carefully and are indisposed to purchase beyond their requirements, but throughout the country the prevailing prosperity and the prospect of excellent trade during the summer are having their effect on orders. In a few lines prices are slightly stronger and the market is characterized by a better tone than for some time. Quotable changes in price are, however, few and unimportant. There is more or less complaint in regard to collections, which are not as easy as could be desired, and in some sections are particularly slow.

Chicago.

(*By Telegraph.*)

Better weather in part of this section has stimulated the demand for Shelf Hardware to some extent. The business of the past week was certainly larger than the previous week, but there is still plenty of room for improvement. The roads are in exceptionally bad condition throughout the Northwest, and even with good drying weather considerable time will be required for them to get in good shape. Snow storms have also been prevalent during the past few days, and last week traveling men were again snowbound in some localities, which is rather a setback for this time of the year. The prices of goods are hardening in quite a number of instances. Stamped ware is dearer and staple goods are steadily moving upward. The strike in the Chicago carriage factories is affecting the trade of the Heavy Hardware jobbers, who have been enjoying an excellent demand from that branch of business. Collections are still bad and the prospects are not bright for an early improvement. It is expected that as soon as farmers are able to get in the fields they will be so busy seeding that they will be disposed to attend to nothing else for some little time.

St. Louis.

(*By Telegraph.*)

The demand for Shelf Hardware is remarkably active, and spring business is opening up in excellent shape. Country orders are coming in regularly calling for large quantities of goods, indicating that dealers look for a good spring trade. Builders' Hardware continues to be in good demand, and locally the building outlook is very encouraging. Carriage Bolts and Stove Bolts are in good demand, and Trace Chain and Wagon stock are included in nearly every order which is received from Texas points. Barb Wire and Wire Nails are active, at advanced prices. Collections do not improve to any extent and are still reported slow.

Notes on Prices.

Cut Nails.—The Cut-Nail market is steady and without specially new features. Trade is continuing in very satisfactory volume, the aggregate of transactions being large. The market in the matter of price is represented by the quotation of $1.20 for carload lots at mill and $1.40 for similar lots on dock, New York. The new card is being adhered to remarkably well and is used with general satisfaction by the trade. While there is a disposition to regard orders with a high average with exceptional favor, the understanding that quotations are to be made without regard to average is very well carried out by the mills.

Chicago, by Telegraph.—A very fair trade is reported by local manufacturers. They now quote $1.40 on account of the lower freight rates from the East after April 1, but express themselves very confidently as to their ability to maintain this price, notwithstanding the report of some cutting in other localities. Small lots from stock are held at $1.50.

Wire Nails.—The Wire-Nail market is in what is generally regarded as a very satisfactory condition, the volume of business being heavy and dealers evidently purchasing freely in confidence that Nails bought at ruling prices are a safe purchase. Quotations are on a basis of $1.50, f.o.b. factory, with Cleveland as the point of equalization for the West and Pittsburgh for the East. This quotation is maintained with exceptional firmness, and it is thought not unlikely by some well-informed parties that higher figures will be named in the near future. Small lots from store in New York are quoted at $1.75 @ $1.80.

Chicago, by Telegraph.—Manufacturers report a very good demand from the large trade, and in numerous instances very prompt shipment is wanted, showing that stocks are being run quite close. Prices are maintained very firmly, as is shown by the inability of manufacturers to purchase odd sizes from each other at anything less than the current market quotation. Inquiries are coming forward from large buyers who were supposed to have covered their wants for the greater part of the spring trade. The demand bids fair to continue in full tide longer than usual. A reduction of 2 cents per hundred in freight rates from Ohio mills goes into effect on April 1, but if the volume of business keeps up it is not likely that the reduction will be made on prices here, which are now $1.65 for carload lots and $1.70 for small lots from stock.

Barb Wire.—The Barb-Wire market is firm on a basis of $2.45 to $2.50 for Four-Point Galvanized in carload lots at mill. The volume of business is large and the condition is, on the whole, very satisfactory to the manufacturers. Anticipations are expressed that the year's business will be exceptionally heavy, some indications pointing to an unusually large demand. Carload lots on dock in New York are held at $2 65 to $3.70. There has been no recent change in the price of small lots from store.

Chicago, by Telegraph.—Manufacturers note a steady improvement and expect a very heavy trade as soon as the weather improves throughout the Northwest. Jobbers are now in line, quoting prices no lower than those of manufacturers. This has given a better tone to trade, as it shows that jobbers' stocks are being worked off. Small lots are now selling at $2.30 for Painted and $2.70 for Galvanized. Carload lots are quoted at $2.20 and $2.60 respectively.

Tackle Blocks.—The market is very irregular and prices are probably lower than ever before, with a tendency still downward. This condition of things affects not only the Iron Strapped Blocks, but also the fancy and patent Blocks to some extent. This line as a whole is in a very unsatisfactory condition and characterized by a good deal of irregularity owing to the very animated competition between the manufacturers.

Carriage Bolts. — Common Carriage Bolts are in a somewhat more satisfactory condition than a few weeks ago. There is evidence of a reaction from the extreme prices which have lately ruled and some of the lowest quotations have been withdrawn. The market is still somewhat uneven, but there is an evident improvement in its tone. The volume of business is large and many of the manufacturers are full of orders.

U. M. C. Loaded Shells.—The Union Metallic Cartridge Company, Bridgeport, Conn., have issued a revised price-list of their New Club, Smokeless and Trap-Loaded Shells, in which some additions are made to their former line on which the list prices remain unchanged. It is subject to a discount of 40 and 10 and 10 per cent. In connection with it they issue a circular under date March 15, in which they give information in regard to the principles on which the Shells are loaded.

Steel Mortar and Brick Hods.—These goods, which were described in our columns a short time since, are put on the market by the Avery Steel Mfg. Company, Chicago, for whom Wm. H. Jacobus is agent, 90 Chambers street, New York.

They are sold from the following list, which is subject to a discount of 40 and 10 per cent. :

	Per doz.
No. 50 Steel Mortar Hods, galvanized, 24x12x13 inches	$45.00
No. 60 Steel Mortar Hods, black, 24x12x 13 inches	39.00
No. 55 Steel Brick Hods, galvanized, 21x6½x9 inches	34.50
No. 65 Steel Brick Hods, black, 21x6½x9 inches	28.50

Avery Steel Tote Shop Box.—Avery Steel Mfg. Company, Chicago, for whom Wm. H. Jacobus is agent, 90 Chambers street, New York, are manufacturing this article, a description of which appeared in a recent issue. It is sold from the following list, which is subject to a discount of 40 and 10 per cent.:

Steel Tote Shop Box.

	Per 100.
No. 2, plain, 18 gauge, 18 inches long, 10 inches wide, 5 inches deep	$100
No. 4, plain, 18 gauge, 21 inches long, 10 inches wide, 5 inches deep	120
No. 6, plain, 16 gauge, 20 inches long, 10 inches wide, 5 inches deep	143

The above sizes are carried in stock; other sizes will be quoted on application.

Harvard Pants Stretcher.—This article, a description of which appeared in our last issue, is put on the market by Geo. H. Gregory, 35 Arch street, Boston. It is sold to the trade at $6 per dozen.

The W Stake Irons.—The malleable Surface and Mortise Stake Irons, manufactured by the Minnesota Hardware Company, St. Paul, Minn., and illustrated in *The Iron Age* December 22, 1892, and March 9, 1893, are sold to the trade at the following net prices:

No. 1, Surface Iron	10 cents each
No. 2, " "	13 " "
No. 3, " "	16 " "
No. 4, " "	20 " "
No. 20, Mortise Iron	14 " "
No. 30, " "	17 " "
No. 40, " "	21 " "

Steel Web Picket Fence.—The De Kalb Fence Company, De Kalb, Ill., are manufacturing this Fencing, which was illustrated in a recent issue. The list price of the Fence, 6 cables, 37 inches high, is 13 cents per lineal foot, which is subject to a discount of 30 per cent., f.o.b. De Kalb.

Wire Board and Ornamental Strip.—This article, which is manufactured by the De Kalb Fence Company, De Kalb, Ill., is sold to the trade at 3½ cents per pound, f.o.b. De Kalb.

Lake Superior Stone.—A. W. Chase, 107th street and First avenue, New York, has issued a new price-list of Lake Superior Stone, which is as follows, subject to a discount of 40 per cent.:

	Per pound.
Stone, 8 x 2 x 1½	$0.26
Slips, 3½ to 5 inches long	.40
Penknife Pieces, 3½ to 5 inches long	.48
High Rounds	.40

Mounted in Polished Cases.

	Per dozen.
3½ x 1	$3.50
4 x 1½	4.00
5 x 2	5.00
6 x 2	5.50
7 x 2	6.00
8 x 2	6.50

Scythe Stones are quoted at $12 per gross, subject to a discount of 40 per cent.

Glass.—There is little of interest in the Glass market at present, and no changes in prices or in the condition of trade. Local dealers report a moderate amount of trade, while factories are represented as shipping their product so that stock is not accumulated. Improved conditions in weather are likely to increase the demand for Glass in the near future. At a meeting of the National Window Glass Company, held last week, no action regarding lower discounts was taken. It is understood that the Glass importers of New York and Boston held a meeting st Boston on the 28th inst., looking toward concerted action in regard to prices. The Plate-Glass Market continues in a satisfactory condition, both in regard to prices being sustained and in the demand. We quote prices as follows: American Window Glass, 2000 boxes at one time, 80 and 10 and 10 per cent. discount; carloads, 400 boxes, 80 and 15 per cent. discount; less quantities than carloads, 80 and 10 per cent. discount. Freight allowed on car lots and over, not to exceed 17½ cents per 100 pounds; less than car lots, f.o.b. at shipping point. French Window Glass, 75 and 10 and 5 per cent. discount to 80 and 5 per cent. discount. American Plate ranges in price from 60 and 2½ per cent. discount to 60 and 5 per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

Fires.

THE PLANT of the Wm. Schollhorn Company at New Haven, Conn., was visited by fire about 2 a.m. on the morning of March 28. In the absence of any other theory, it is supposed to have been occasioned by spontaneous combustion. The manager at present is unable to approximate the loss on any trustworthy basis. The department in which Shears, Scissors, &c., are made, sustained the greatest damage, the polishing room suffering the most. The section for making Bernard Pliers, Cutting Pliers and Coach Locks was injured by water only, and it is hoped to have this in running order early next week. By drawing on stock in merchantable condition at New Haven, supplemented by that now at the New York warehouse, 65 Duane street, they are prepared to execute orders fairly well now. They estimate their Shear business will be put back about three weeks.

THE NEW YORK WAREHOUSE of G. T. Moore, 112 Chambers street, manufacturer of and jobber in Hardware and Tools, was visited by fire during the night of March 25, after the close of business. When left the place was apparently in good order, no satisfactory explanation so far having been found to account for the occurrence. The lower floor, in which a harness business was carried on, was damaged by water, while the two upper floors used for the manufacture of baseballs, &c., and as a printing establishment respectively, were more or less burned to the roof, mainly in the rear. Mr. Moore estimates his stock as valued at from $12,000 to $15,000, on which he carried a line of insurance aggregating $10,000. An inventory is now being made to afford a basis for adjustment.

THE Hardware Club OF NEW YORK.

A MEETING of the recently elected Board of Governors was held at the office of William H. Williams, March 24, when in accordance with the requirements of the constitution the governors were divided by lot into three classes, holding office for one, two and three years respectively, with the following result:

For one year: Eugene Bissell, Thomas F. Keating, James H. Kennedy, John L. Varick, R. R. Williams.

For two years: Alfred D. Clinch, Charles Daly, Brace Hayden, Mortimer C. Ogden, Webster R. Walkley.

For three years: Arthur G. Sherman, Robert H. Swayze, Peter McCartee, W. H. Williams, E. C. Van Glahn.

The governors then proceeded to the election of officers with the following result:

President, WILLIAM H. WILLIAMS.
Vice-president, ROBERT H. SWAYZE.
Treasurer, THOMAS F. KEATING.
Secretary, JOHN L. VARICK.

It will thus be seen that the former officers were re-elected.

In accordance with the resolution adopted at the annual meeting of the Club, the treasurer was authorized and instructed to issue a circular calling for the payment of initiation fees.

Export Notes.

A POSTAL CONFERENCE was held at Brisbane, Australia, March 21, at which all the colonies of Australasia were represented. The Hon. J. G. Ward, Postmaster-General and Telegraph Commissioner of New Zealand, moved that a cable be laid between Australia and New Zealand. The Hon. John Kidd, Postmaster-General of New South Wales, seconded the motion, which was also supported by the Hon. T. Unmack, Minister for Railways and Postmaster-General of Queensland. The debate on the motion was postponed. This undoubtedly refers to increased cable facilities, as a line from Sydney, N. S. W., to Nelson, New Zealand, has been in operation for some years.

Advices from Venezuela state that on and after March 1 all merchandise to Venezuela ports from the United States or Europe, which, in arriving at Curaçoa, is to be transferred to other vessels, shall be considered for the purpose of the payment of import duties as if coming directly and originally from that island. As a result of this the steamers of the Red "D" Line between New York and Venezuela ports will carry cargo to Maracaibo without transshipment at Curaçoa, although they will call both ways at the latter port.

A former ex-President of Bolivia, as special Ambassador, has effected a treaty of peace and alliance with Chili, whereby Chili agrees to cede to Bolivia a port upon the Pacific (thought to be either Arica or Antofagasta) and to arm, equip and instruct the Bolivian National Militia.

Bolivia thus becomes virtually the vassal of Chili, cutting at one stroke the historical ties which formerly made her the ally of Peru and the friend of the Argentine Republic. A fair inference is that the provinces wrested from Peru by Chili ten years ago will not be redeemed next October when the expiration of the time limit occurs.

The President of Chili has been authorized to contract an internal loan in account current or in Treasury bills for $4,000,000, the term not to exceed six months nor the interest 6 per cent. per annum. This loan will be used to cancel the same amount owing to the banks.

The Chilian Government is placing £2000 at the disposal of the Nitrate Permanent Committee for the purpose of assisting in the Nitrate propaganda at the Chicago Exhibition.

The steamer "Ashford" of the Norton line of steamers for the River Plate will get away March 29-30 with a full cargo, under such favorable circumstances that it has been found necessary to charter an extra steamer to leave about April 12, preceding the "Lamington," announced to sail April 28. Cargo going forward at present consists largely of Agricultural Implements, Sewing Machines, Kerosene, Lubricating Oils, Hardwood Lumber, Hardware covering a wide assortment, Domestics and Woolens, with a filling in of miscellaneous goods indicating diversified wants.

The following figures given by a high authority recently summarizing the present and past condition of Mexico indicate considerable progress. Hon. Thomas Ryan, U. S. Minister to Mexico, in a recent address said, Mexican exports had increased in the last four years from $49,000,000 to $75,000,000. As illustrative of the commercial relationship of these exports to the United States markets he stated that of Mexico's total exportations during the last year of $75,000,000, this country took $50,000,000. Of her $36,000,000 of precious metals exported the preceding year, $23,500,000 went to the United States, and of the $27,000,000 of merchandise exported in the same year the United States markets took all but $6,000,000. Under the *regime* of President Diaz Mexico's annual exportations have increased $50,000,000. The export of coffee has doubled in the last four years. In 1888 it was $3,000,000, in 1891 it reached $6,500,000. At the commencement of President Diaz's administration the annual export of coffee did not exceed $1,000,000. From present indications it fairly promises to reach $15,000,000 to $20,000,000 in the next ten years.

Recent advices from Queensland, Australia, estimate the damage, as near as such things can be approximated, at about £3,000,000 sterling, as a result of the floods in and around Brisbane early in February last. The waters rose to 11 and 12 feet above the highest point attained in the great overflow of 1890. E. A. Neane had 400 tons of sugar in Applin Brown's warehouse on the lower floor. Parbury, Lamb & Co., had 250 tons of sugar and 150 tons of salt, together with 1000 bales of wool submerged. Alfred Shaw & Co. sustained an estimated loss of but £3000 sterling, having profited by 1890 experiences. About 500 houses from the country back of Brisbane were carried down stream, which, striking the Victoria bridge, a fine structure containing something like 2000 tons of iron, resulted in its being carried away, the undermining of the waters assisting in its destruction. For some days flour sold at £5 per sack of 200 pounds; sugar at 6 pence per pound, a normal price being 2 pence, and corresponding prices in other goods.

W. E. Peck, exporter, is executing an order from South Africa recently received for 12 Wheeled Scrapers with a like number of Heavy Grading Plows to be used in connection with them. These are intended for pioneer work such as the laying out of roads, railroads, building of dams, &c.

In the matter of exchange it may be said that cable advances at Valparaiso are quoted at 16 pence on the Chilian dollar. This low rate is causing a depression in trade, a normal rate for years having been about 25 pence, although it has reached 40 pence. Importers there are surprised at this condition when it is remembered that within two or three months Chili offered a loan in Europe of about £1,800,000 sterling at 5 per cent. for which £13,000,000 sterling was subscribed indicating a good credit.

It is not every manufacturing interest whose foreign trade will warrant the employment of a steamer to carry their goods for distribution through one port of entry, even for a season's orders, more especially as its product is marketed, not only extensively in the United States but widely distributed abroad. In this connection it may be said that the steamer "Dunmore Head," chartered by the Walter A. Wood Mowing & Reaping Machine Company, which cleared this port last month for Odessa in Southern Russia, has arrived out and about discharged her cargo. Her freight was consigned to the order of one representative Parisian house, and with the exception of a few odds and ends was made up of Agricultural Implements from the concern referred to. The fact that this is not unusual, but has been done for years, testifies to the favor with which some classes of wares made here are received abroad.

Manufacturing.

THE H. M. MYERS COMPANY of Beaver Falls, Pa., manufacturers of Shovels, Spades, Scoops and Drain Tools, are operating their works to their utmost capacity, and shipping their goods about as fast as made. The output at the above establishment for this month promises to be the heaviest for any one month in the history of the concern, and is expected to amount to 5000 dozen of Shovels. Up to this time the trade of this concern for this year in comparison with same period of last year shows an increase in output of about 7000 dozen, and, if the same ratio of increase is maintained for the balance of the year, it is expected their product will eclipse the output of 1892 by about 50,000 dozen Shovels. F. M. Wheaton, formerly treasurer of the above concern, has severed his connection with it and will engage in the insurance business in Pittsburgh.

A. B. Olsen, Kansas City, Mo., manufacturer of Olsen's Automatic Ejecting Rotary Corn Poppers, reports a heavy demand for all the different sized machines made by him. He is at present engaged on an extensive order for his Poppers, to be used in the World's Columbian Exposition in Chicago. Mr. Olsen also advises us that he is forming a stock company, with headquarters in New York City, to manufacture his Corn Poppers for the New England States, New York and Pennsylvania. This company will have a capital of $25,000, and will sell only in the localities above mentioned.

The Howe Scale Company, Rutland, Vt., have issued two handy illustrated catalogues 5½ x 3½ inches, describing the goods they manufacture. The larger of the two treats of their Scales, too well known to require detailed mention. The other, consisting of 56 pages, is devoted exclusively to Trucks and Barrows. Until within a year something like 50 varieties of these goods, including styles and sizes, would cover their output. By the erection of a series of buildings just across the track from the others, covering about 6 acres, this capacity has been increased to 500 or 600 styles and sizes. One of the new buildings is 400 x 150 feet, and the addition they now refer to as constituting the largest plant of the kind in this country. In addition to the usual Hand Trucks, they are making Dry-Goods and Wagon Trucks, Grain Wagons; Ham, Pork, Sausage and Tobacco Trucks; Baggage Barrows, Express Wagons and Trucks, Timber Dolly's, Grocery Trucks, Skids, &c. Page, Dennis & Co., 325 Broadway, New York, have the sale of these goods here.

Matthai, Ingram & Co., Baltimore, Maryland, manufacturers of Tinware and kindred goods, who suffered recently from fire, announce they are not as badly damaged as they at first supposed. They have already commenced to rebuild and will push along vigorously. The damage to the retinning department proved to be not as great as at first appeared, and operations there have already been resumed. A large stock of Dripping Pans were stored in another building and, barring a few sizes, shipments are being made as promptly as usual. They will have the retinning and galvanizing departments entirely isolated hereafter from the other buildings and made as nearly fire proof as possible.

The Allerton, Clarke Company, 23 Lake street, Chicago, is a recent incorporation of which S. W. Allerton is president, C. C. Clarke is treasurer and C. A. Rosecrans is secretary. They are sole Western agents for L. A. Sayre, Norwich Lock Mfg. Company, The Arcade File Works, Columbia Tin-Plate Company, Columbia Encaustic Tile Works and Irondale Steel and Iron Company. The officers of this new company are men of high standing and long business experience, and, as the foregoing list shows, they represent a number of exceptionally high-class manufacturers of articles handled by the Hardware and allied trades.

The Sterling White Lead Company of Pittsburgh have made application for a charter of incorporation. The plant of the concern will be located at New Kensington, Pa., about 20 miles from Pittsburgh on the line of the Allegheny Valley Railroad. The officers are Gerard C. Smith, president; W. W. Lawrence, vice-president; J. J. Lawrence, Jr., treasurer, and H. W. Beymer, superintendent. It is stated that this new concern will not become a member of the White Lead Trust, but will carry on their business entirely independent of that organization.

After Mexican Trade.

By Wm. H. Maher, Toledo, Ohio.

No. IV.—City of Mexico.

THE CITY OF MEXICO is the social, political and financial center of the republic. The population is variously estimated at from 300,000 to 500,000. It has a large wholesale trade, and heavy stocks of goods are carried there. Stocks are not mixed, as they are in the smaller cities. The head of the leading Hardware house is a brother of the well-known Herman Boke rof New York City. The concern that appears to be at the head of the machinery business is the Seeger & Guernsey Company.

We were nine days in the city, during this time attending to business each day, and visiting, in a body, some of the various factories and public works. In the evening there was comparing of notes, and in this article I shall frequently draw upon such information as was given me by men about their various lines.

I have not mentioned that the street cars in the Northern Mexican cities were mostly made by the J. G. Brill Company of Philadelphia. G. M. Brill, the president of that company, was with our party. In the City of Mexico we found most of the cars were made by Stephenson, but Brill cars were also there.

In the principal grocery I found Menier Chocolat, and it was also well advertised in cars and stations; but the art of advertising on walls by bills and posters or by large, painted signs is little understood or practiced.

In the railroad stations Fairbanks' Trucks were universally used.

Studying the labels on the bottles in a great many attractive windows I saw that Thomas & Son of Louisville were well represented in whisky. The Royal Baking Powder was very generally on sale, but I also saw a great many American brands of cheap grade baking powder.

In one of the handsomest furniture stores I was told the larger share of the goods offered for sale came from the house of Leo Austrin & Co., Chicago. Yale Locks are used on stores and all important buildings, though next to the handsomest Yale will be found a lock of a pattern 100 years old, having a key almost large enough to be used for a baseball club.

The fire engines, I was sorry to see, were of London manufacture. In the hotels the Table Cutlery was from Paris—blades were of a fine grade of Steel; handles were of Nickel or White Metal. The German Silver Spoons were of English make, the teas being smaller than ours, and, according to present notions, handsomer. I was told that both the Studebaker and the Milburn Wagons were sold here, but a great many unwieldy carts are used, undoubtedly of home manufacture, while the great mass of the carrying trade is by packs on the little burros. In one store I saw a good line of pocket Cutlery from the Koeller & Schmitz Cutlery Company.

I fancy many of my readers, though Hardwaremen, will be interested in notes of my visit to the cotton factory of San Antonio Abad, in this city, and especially so in the matter of wages. We visited the factory upon the invitation of the Governor. We were met most cordially by the managers and shown through. Land is cheap and the machinery is on the ground floor, or more exactly speaking, on the stone floor. The mill was built in 1883, employs about 600 hands, has 350 looms, makes two grades of cloth—5 and 9 pounds to the yard. All the machinery is of English make, except the Brush electric plant. The factory uses 2,000,000 pounds of cotton per annum; about one third of this is bought in the United States, the other two-thirds is Mexican grown. The Mexican cotton is coarser and has a longer fibre than ours; will average 1⅛ inches longer. Average wages paid in the factory, 81 cents per day; cheapest, 37½ cents; highest, $1.50; machinist working 12 hours is paid $1.25. In the printing department the machines print three to six colors; three colors sell best, and red, with its various shades, is the most popular tint. The factory turns out 9000 pieces of cloth per week. Prices range from $3.50 to $5 per piece of 32 yards. There were no unsold goods on hand and it was said that their orders are always ahead of them. The designs were very pretty and many of them of great artistic merit. The designer is a German. The superintendent spent three years in Europe preparing himself for the business. Capital employed is about $1,000,000; net profit last year, $180,000.

Another day, at the Governor's invitation, we visited the cigarette factory of Ernest Pugibet—the largest in Mexico. Here 2,000,000 cigarettes are made daily by 800 girls. It is claimed that wages average 60 cents per day, but the forewoman told us that 40 cents was nearer the correct figure. Pugibet is a Frenchman of address, energy and brains. He has grown rich in this business in a few years. He uses only Mexican tobacco and no adulterations of any kind. Cigarettes are made by hand and also by a patent French machine; he has 60 of these, and they make daily 12,000 each, one machine being equal to 10 girls. In the factory is a 50 horse-power Corliss engine. The cutting machines are from London. Drying machines are from Baltimore. Grinding machines come from the United States, cost $125 there, $400 laid down here. Señor Pugibet is the inventor of a cutting machine, which with one horse-power will cut 6000 pounds of tobacco per day.

At the Tlalpam cotton mill we found 500 looms, 9000 spindles, 700 to 800 hands. A finer grade of cloth is made here—percales—and only American cotton is used; cost $22 per 100 pounds laid down at the factory. All the machinery is English, except Brush Electric Plant. The product is sold at from 8 to 15 cents per Mexican Vara—33 inches.

The oldest cotton mill in Mexico is that of La Fama, which we also visited. Power is obtained from a 66 foot overshot water-wheel, 6 foot face. Has 270 looms. Found but one American machine in the whole factory. Wood is used for fuel and is brought up the steep hill packed on burros in pieces 2 feet long and ordinary store size: it is sold at $1.25 per 100 pieces. American hard coal is used to a small extent here and in the Tlalpam mill and costs $18 per ton at the yard.

Mr. Bromley, the carpet manufacturer in our party, from Philadelphia, found the carpet trade not very promising, though there was a fair demand for rugs. In carpets a very common jute that retails with us at 20 to 25 cents sells there at $1. No good ingrains are sold there. Tapestry Brussels sell for $1.50, body Brussels $2.50. The art squares, so popular with us, cannot be bought there. A common matting that we buy at 25 to 35 cents sells at $1 in Mexico. The floors of houses, first and upper stories, are of stone or cement; rugs seem most appropriate for such floors.

As to prices of common things, printed letter heads, letter size, cost $20 per 1000. Common manila wrapping paper, 12½¢ per lb. Flour is $12 per barrel; potatoes 7¢ per pound. I saw but few stoves offered for sale, and for that matter very few are used. The masses have either no stove at all, building their fires on the ground of their poor houses, or else have a little stove about the size of an ordinary iron kettle. But I occasionally saw an American pattern cook stove, and one dealer had one "marked away down" to $19.11; such a stove would sell for $7 to $8 here. For this reason Mr. Sheppard of Philadelphia sold no stoves on this trip.

Talking with Mr. Heinz, the Pittsburgh pickle and preserve man, he told me there was but a limited sale possible for his goods in Mexico. The prices at which it was necessary to retail them there put them out of the reach of all but the very few. For instance, pickles, such as retailed in the United States at 25 cents per bottle, sold in Mexico at from 75 to 90 cents. Tomato catsup, an article the Mexicans would buy freely if price was within their reach, sold at $1 per bottle; the same size we pay 25 cents for.

Mr. Williams of Brooklyn, the chair manufacturer, found that the demand was almost altogether for very cheap and light chairs. Such a chair as he sold for $5 per dozen cost, laid down here, $14 per dozen. We saw chairs made by native workmen; good, solid-looking work; not handsome, as we judge of beauty, yet by no means ugly or clumsy. These sold at 75 cents each, and probably the chair maker made 37½ cents per day at his work and was satisfied. Such competition was hard to meet. But the richer class buy handsome chairs, and Mr. Williams brought away with him some orders for fine chairs, as well as for cheaper grades.

Mr. Cutler of Buffalo found his desks already well introduced into Mexico and in all the Government offices. An extra handsome Cutler desk faced us when we made our call upon President Diaz. We also saw desks from Andrews of Chicago.

Our shoe man, Mr. Farr of Allentown, Pa., met with no encouragement in Mexico for his goods. Speaking with an American lady, a resident of the city, she told me that she had to send to the United States for shoes for herself and her children, and that her compatriots had to do the same. The American man, she said, could find a shoe to wear, but no

American woman would wear the Mexican or French shoe if she could possibly get an American shoe. But the local dealers made no effort to supply this demand and would not order of Mr. Farr.

John K. Royal of Harrisburg, Pa., manufacturer of burial caskets, found no encouragement for his business in Mexico, though no member of the excursion looked up the various details of his line closer than he. Coffin trimmings are all bought in the United States, and Sargent & Co. are most frequently mentioned as supplying the larger part of these goods. But the masses use a very cheap coffin. One undertaker, when we asked him the price of a home-made coffin, supposing us to be in need, offered to sell the one we saw for $2, but declared that his regular price was $2.25. In the City of Mexico some high-priced coffins are sold, but the leading undertaker there said the duty on caskets was almost prohibitory, and the low price of Mexican silver in the financial world destroyed any hope left open by the tariff. Your readers probably know that a Mexican funeral is not the pageant of hearse and carriages, as with us. Instead of this, the friends hire a street car, which is both hearse and carriages. There are three classes of these cars, to suit all purses; the driver wears crape on his hat and drives his mules in a solemn and subdued manner, appropriate to the occasion.

Our representative of the morocco trade, C. H. Royal of Philadelphia, found no opening for his leather in Mexico. Although Mexico exports hides in large numbers, leather of all kinds is very dear there. A good quality of harness or sole leather that would sell at 30 cents in the United States costs $1.50 in Mexico.

In a glass and crockery store, where I was making some trifling purchase, I noticed that a large number of invoices were lying on the desk from the United States Glass Company of Pittsburgh. I was told that a share of the crockery was bought in East Liverpool, Ohio.

While we were in the City of Mexico I saw mention in the paper of the arrival at Monterey, from England, of the largest Lathe in Mexico; cost $7000, our money. I was sorry some American factory did not capture that order.

(To be continued.)

Trade Items.

EVERYBODY in the Hardware trade knows J. E. Sleight of Church & Sleight, 109 Fulton street, New York, who has entered upon his thirty-first year on the road, traveling from one end of the country to the other and taking in Canada between times. Mr. Sleight is receiving the congratulations of his friends and keeping a weather eye for business.

J. WALTER DAVIS, West Gardner, Mass., has recently opened a new store, 31 x 100, three stories and basement, heated by steam and fitted up elaborately.

T. S. STEWART, formerly of Springfield, Mass., has opened a new store in Orange, Mass.

T. P. CARRUTH, Orange, Mass., who was completely burned out about a year ago and since then has carried on business in temporary quarters, has re-located in a handsome new building, where he has a store of convenient size and arrangement, which was opened to the public with dedicatory ceremonies March 16.

F. H. BEECHER, for many years closely identified with manufacturing in the Naugatuck Valley, has been made treasurer and general manager of the H. A. Matthews Mfg. Company, Seymour, Conn. The concern were established in 1890, and its products include Stove Trimmings, Lamp Burners, and Fancy Brass Goods.

THE STYLE of the wholesale Hardware firm of Bradford Kennedy & Sons, Syracuse, N. Y., has been changed to that of Bradford Kennedy, Sons & McGuire, James K. McGuire, who has acted as cashier for the old firm for six years and has been in their employ altogether ten years, having been admitted to partnership. The firm of Kennedy, Spaulding & Co., predecessors of Bradford Kennedy & Sons, were formed in 1859, Bradford Kennedy, the senior member of the present firm, being the head of the house. In February, 1892, R. R. Spaulding retired and Harry L. Kennedy was admitted to partnership. The members of the present firm are Bradford Kennedy, George H. Kennedy, Harry L. Kennedy and James K. McGuire.

CAMPBELL CUTLERY COMPANY, Syracuse, N. Y., advise us that they will exhibit at the World's Fair their Campbell's Practical Sliding Display Trays for showcases. The goods will be exhibited in the Manufactures and Liberal Arts Building, on the east side. The Trays will be filled with samples of the Cutlery put on the market by the firm, and a convenient opportunity will thus be afforded the trade to inspect the different goods, including showcases with or without Campbell's Display Trays. Orders may also be left for shipment from factory for any or all of these lines. The company advise us that they are frequently assured by dealers using the Trays that their presence in the store has been the means of selling more Cutlery than would have been the case otherwise.

J. DEUTZ & SON, dealers in Hardware, Mining Tools, Powder, Glassware, &c., Laredo, Tex., have admitted J. Deutz, Jr., to partnership, the firm name becoming J. Deutz & Sons. The members of the firm are J. Deutz, M. Deutz, H. Deutz and J. Deutz, Jr.

THE CHICAGO STAMPING COMPANY, Chicago, will remove their storerooms and offices May 1 from their present location to their new buildings adjoining their factories at Harrison, Green, Peoria, and Congress streets. The increase in their business has made it desirable to concentrate their factories and stores to facilitate the execution and shipment of orders with the least delay.

A. G. SPALDING & BROS., 241 Broadway, New York, dealers in Sporting and Athletic Goods, Bicycles, &c., will give a preliminary view of the Fishing Tackle they will have on exhibition at the coming Columbian Exposition in Chicago, which can be seen by their patrons and others at the above address, Thursday and Friday, March 30 and 31. This is for the purpose of enabling those interested to see a fine collection of this line of goods, whose inclinations may not take them to the great Fair.

IN CALLING ATTENTION to the improved form of Nail in our issue of March 23, the name of the inventor was inadvertently given as V. E. Adler, whereas Jos. B. Adler was the originator of the Nail. The confusion of names occurred through a printed letter head.

THE STUART & PETERSON COMPANY announce that they have removed to Burlington, N. J., where their new property embraces ground 410 x 200 feet. They call attention to their foundry as the best equipped in the country, and with greatly improved facilities hope not only to retain their old customers, but to add many new ones to their list. The plant is situated 17 miles from Philadelphia and on the main line to New York, so that the company enjoy unusual facilities for the rapid handling of goods. The Philadelphia office of the company will be at 1020 Arch street, but all communications should be addressed to the main office at Burlington, N. J.

GEO. M. HARRIS, Hardware merchant, Binghamton, N. Y., will soon enlarge his establishment by occupying also the store adjoining his present place of business. He will add to his extensive line of Heavy and Shelf Hardware a large stock of house furnishing goods.

A. F. & F. BRAY, Pawtucket, R. I., issue a catalogue of Seeds and Tools, a line which they are handling in connection with Hardware, Guns, Ammunition, &c. A feature of the catalogue is its arrangement, the cuts and advertising matter being on the left-hand pages, while descriptions of Seeds and directions for their use are on the opposite pages. This is referred to as relieving the sameness of continuous information about Seeds, and as bringing into greater prominence farm implements and kindred wares, than if displayed together on pages in one part of the book. The inside pages of the covers are devoted to tables of plants to the acre, quantity of seed usually sown to the acre, quantity of seed required for a given number of plants or feet of drill, and weight of various articles. The catalogue contains 48 pages, and in addition to Seeds and Tools, illustrations are given of Horse Hay Forks and Pulleys, Mower Knife Sharpener, Wire and Picket Fence, &c. Attention is called to Mixed Paints, Hay and Fodder Cutters, Barrows, Jack Screws, Whips, Pumps, Scales, Poultry and Chicken Netting and kindred goods. The book contains much information for customers, and if preserved will be the means of keeping the firm's name constantly before them.

Returned Goods.

FROM THE JOBBER'S STANDPOINT.

WHILE passing through the receiving room a few days ago my attention was directed to a strange medley of articles in the space allotted to returned goods, the accumulation of only two days—average ones at that.

There were small packages, large packages and lots of goods in no packages whatever. As it was quite an interesting conglomeration, I took a note of some of the articles which constituted it and give it here:

An Iron Pump.
One-half dozen Post-Hole Diggers.
Two bundles Garden Hose.
One coil of Wire Rope.
Three bundles Shovels.
Two boxes Loaded Shells.
One-half dozen Cast Griddles.
A broken Spring Hinge.
A box of Calf Weaners, broken open and some parts missing.
Several packages Carriage Bolts, some of them in very bad condition.
Also several other articles in various conditions.

Being somewhat interested, I inquired the history of the various lots, and learned that the Calf Weaners, the Post-Hole Diggers, the Wire Rope and one number of the Loaded Shells were goods not carried in stock regularly, and had been picked up as an accommodation.

The Pump was specially ordered from the factory, and was returned because the dealer's customer had found one which suited him better before this arrived.

The Wire Rope was ordered and cut too short through dealer's mistake.

The Shovels were sent wrong by one of our order clerks.

The Hose was ordered in good season, but was delayed through negligence of the railroad company, and was not delivered till after close of season, consequently our customer refused it.

The Spring Hinge was not what carpenter wanted, so it was negligently wrapped and sent back, and arrived broken and worthless.

The Cast Griddles were returned for some reason or other—our fault I think—and as they had not been packed at all, they are very badly rusted and will be worthless until they have been repolished.

Thus it was through the entire list. Some of the mistakes rested with ourselves, but more with the dealers. Some of the goods came back accompanied by a terse letter, something like this: "We have returned the following goods. Please give us credit, &c." As much as to say, we can't sell them; you must take them off our hands.

This matter of returned goods is a very serious one to the jobbers of the country. At various times action has been taken on it and some good effects resulted.

A year or so ago, a number of the leading houses issued a circular, stating under what circumstances goods might be returned. Some refused to allow anything to be returned which had not been sent wrong through their own mistake; others were rather more liberal. Few adhered strictly to the rules for any length of time. At first they would make exceptions of old and favored customers, who had overloaded themselves, and as one step led to another, the matter is now virtually where it was before the agitation.

This really means a dealer can buy goods, keep them as long as he pleases and, finding them unsalable, return them to the jobber from whom he purchased them. If A remonstrates, the dealer calmly says he will transfer his trade to B, who will accommodate him. A knows this to be true, so generally gives in and is obliged to receive into stock goods which often are shopworn and damaged, and in many instances have to be sold at an actual loss.

This reveals a bad state of affairs which should not exist. The close competition of late years has led many jobbers to make rash agreements with their customers in order to secure their trade. In their zeal to gain and hold patronage they allow themselves to be imposed upon, and often make concessions which are uncalled for and certainly unbusiness-like.

The privilege of returning goods under many circumstances is right enough, but like nearly every other, it is shamefully abused. About the only remedy I can see is to do as the Edge Tool people have done with their warranty—shut down entirely. Nothing but concerted action will accomplish much.

I am glad to say that dealers, such as I have mentioned, are the exception rather than the rule, but they are numerous enough to be quite a thorn in the side of the jobber.

A word to all who may have occasion to return anything to jobber or manufacturer will not be out of place here. ALL GOODS SHOULD BE CAREFULLY PACKED to withstand the rough usage of the transportation companies. I thought while looking over the aforementioned heap what a howl would go up if the very same parties who shipped those goods to us were to receive goods packed as those were, and in the same condition.

Express companies are not responsible for goods merely wrapped in paper so as to hide the contents. Good strong wood boxes should be used for heavy articles. Surely if the jobber is expected to accommodate his customers, they should see to it that the goods are properly packed and shipped, thus doing all they can to insure delivery in the best possible condition. It is no more than fair, to say the least.

Retailers' Trade-Marks.

IT IS OFTEN FOUND desirable by merchants to associate their names in the minds of the public with a peculiar typographical arrangement, as an effective form of advertising. This is done by

Fig. 1.—Stationery Size.

Samuel H. Blackwell, Fairfield, Maine, by using a trade-mark of white letters on a black background in various sizes, combining in an ingenious manner the words Blackwell and Hardware. Reproductions of the trade-mark in two sizes are given in the accompanying cuts, showing the happy way in which this is accomplished. It appears singularly fortunate that the name is Blackwell, and that the business engaged in is Hardware, which combine so happily in the typographical arrangement shown. The smaller sized trade-mark is printed upon letter heads, business cards, checks, receipts, memorandum

Fig. 2.—For Circulars, &c.

blanks, &c. It is also printed upon gummed paper for pasting on everything that goes out of his stock, and for sticking on circulars of manufacturers and jobbers, which he distributes to his customers. The larger size, Fig. 2, is used at the bottom of circulars of goods upon which special efforts are being made, printed for home use. Circulars of this kind, one devoted to each article, with the article illustrated on it, relate to Pocket Cutlery, Bucket Pump, Mixed Paints, Washing Machines, &c., with plenty of space below the description to print the large trade-mark. This is also used in newspaper advertising. The trade-mark is used for road-side signs also; for this purpose the words cover 8 x 17 inches of paper. It is glued upon smooth boards and afterward varnished to render it water proof. These boards are then nailed upon trees and buildings where they can be seen by people passing. These are much cheaper than painted boards and give satisfactory results. The goods carried in stock include Hardware, Iron and Steel, Cutlery, Cordage, Glazed Windows, Doors, Sash and Blinds, Farmers' and Mechanics' Tools, Kitchen Furnishings, Artists' Materials, Paints, Oils, Varnishes, &c., but are all grouped under the one word, Hardware, and by the method described are associated in the minds of the people in and about Fairfield with the name of Blackwell.

The Cut-Nail Card.

TOUCHING on the advantages and disadvantages of the new Cut-Nail card, we have the following letter from a leading house in Georgia, who express, it will be observed, their desire that the Cut-Nail manufacturers should adopt a card based on the value of each size, whether or not the Wire-Nail manufacturers should see their way clear to taking similar action:

We are pleased with the new Steel Cut-Nail card, for the reason that it does away with averages; that it prevents small dealers, who buy on very high averages, from demoralizing the market by quoting Nails on a lower base price in consequence of their advantage in buying on high averages; that it makes the comparative cost between Wire and Cut Nails easy to arrive at, and that it necessitates salesmen remembering only one instead of two cards. While these are good, strong reasons in favor of the new Nail card, we think it was founded on a dangerous policy rather than on true business principles; that is, it was adopted through necessity rather than on the relative value of the various sizes of Nails, and for this reason we believe the card cannot be of any great duration.

We would be very much pleased to see the Cut-Nail manufacturers adopt a card based on the value of each size, even though it did not conform to the advances as made by the Wire Nail manufacturers.

Catalogue of Fine Builders' Hardware.

WALBRIDGE & CO., Buffalo, N. Y., issue an artistic catalogue of Fine Builders' Hardware, which shows to advantage the line of goods displayed. The cover is finished in cream and gold with embossed work and raised letters, the plates and covers being held together with colored silken cord. The above company have recently fitted up a special room for the display of fine house trimmings, in which samples of the different finishes mounted on all the natural woods ordinarily used are shown. In this catalogue a photographic view of the interior of the room is given, and also larger views of each of the sample boards. The sample boards are made of oak, mahogany, cherry, white enamel, sycamore, maple, &c., which show to advantage the various finishes of Polished Bronze, Old Copper Bronze, Gold Enamel Bronze, Bower-Barff, Oxidized Silver, &c. The assortment shown is varied and comprehensive. The firm were led to fit up their bronze room to facilitate the se-

lection of suitable Hardware by architects, builders and owners, as the necessity of harmony between the style of architecture of a building and the patterns and finish of the trimmings was fully recognized by them.

A Method of Keeping Quotations.

BY ROBERT C. BIALY.

MY SYSTEM of keeping quotations, price-lists, catalogues or information of any kind pertaining to the Hardware or Machinery trade is as follows: I have in my office a large roller top desk of the latest improved pattern, 5 feet long and 3 feet wide, with pigeon holes above the writing table and drawers below. Each drawer is divided crosswise into three parts, except the bottom right-hand double drawer, which is divided into three parts lengthwise, to take in extra large books or printing matter. This desk has also one wide drawer in the center, 25 x 28 inches, which is used for large sheets, plans or details, which are frequently used in estimating work from the architect's office. Each drawer is lettered commencing with the letter A, and each apartment numbered commencing with No. 1. This gives the location of everything in the desk. In addition to the desk, I have a cupboard at the left hand of the desk with four doors above to swing open and four below to lock and unlock when required, the cupboard being 8 feet 6 inches high, 7 feet 6 inches wide, and 12 inches deep, while the lower part is 32 inches high and 18 inches deep. This cupboard is divided into 58 apartments. Each apartment is lettered, commencing at the top left-hand corner with A, running down each tier from the top to Z. This leaves the lower part for any extra printing matter for mail or distribution, and the sizes given for pigeon holes takes in all sized catalogues from the largest to the smallest generally used. The extra large catalogues can find storage in the desk, as previously described.

I also use Shannon's Cabinet Letter File, containing 24 drawers, eight drawers high and three wide, with Acme locking attachment and cabinet base below with two doors and a shelf through the middle, with lock. The first 15 drawers of the letter file cabinet are devoted to correspondence in the letters A to Z. The 16th drawer is marked Special Index, with index sheets through the alphabet within. In this drawer I have between each layer of the index sheets five sheets of paper especially ruled, as follows:

Name of goods.	Mfg. or jobbing house.	Catalogue or list.	Cost price.	Date.
Axes.....	Wm. Mann, Jr., Lewistown, Pa.	Cupboard M	$6.00—$10.00...	June 1, '90
"	Wm. R. Mann & Son, Mill Hall, Pa.	" M	$7.00—$12.00...	" "
Bolts.....	Lamson, Sessions & Co., Cleve and, O.	" L ...	Dis. Carriage, 75—5 %	" 10, '90
"	Mich. Bolt & Mch. Co. ...	" M.....	Mach. 80—5 %..	" 12, '90

The other drawers are used for filing invoices, receipts, paid and unpaid bills, &c. The bottom drawer is used for unpaid bills. When a bill comes in that is to be discounted, it is placed in the bottom drawer, as the time is usually short, and it generally has to be remitted for before goods arrived; in this way it is not lost sight of before the time for discount expires. In the special index each article is indexed by its name, with cost, kind of goods, name of maker or agent, address and date, and where the catalogue or price-list is filed, whether in the desk, cupboard, cabinet or any particular place in the office. In fact, this index drawer is the key to the whole business and tells where to find everything pertaining to the article asked for. The buyer is thus in a position to be acquainted with everything new or old appertaining to the line, and by keeping this up is master of his position. Then, in addition, I have my safe made to correspond with other cabinet work in which to keep articles of agreement, agency contracts, and other papers of value. I have all drawers and pockets made 4½ inches deep to take in large envelopes and articles, filed to stand edgewise.

In order to have this complete every apartment must be lettered and numbered and recorded in the index drawer. Now, for an illustration we will suppose Mr. Smith calls representing Harvesting Machinery for Walter A. Wood. The catalogue is filed in the cupboard and recorded in the index under Machinery, telling where catalogue is, and if quotation or scale of prices are left they are written out by the agent on a blank sheet and this filed in the letter file cabinet as correspondence. Thus when an article or machine is called for it is not necessary to think of the manufacturer's name, but you look in the index for the kind of goods, such as Machinery, Stoves, Paints, Boats, Iron, Nails, &c., and there you get the name of makers or sellers, and if you have had any correspondence with them you refer to the letter file and to the cupboard for list price and catalogue. The clerks in the store or any other employees can become familiar with this plan and know where to find catalogues, prices, invoices or correspondence; and if a contract is made, which is usually the case, for goods to come on later, this is filed in the safe for the use of confidential clerk or proprietor. In this manner the file is kept up—filing price-lists or catalogues, and recording the kind of goods and the cost price quoted. In addition to this a regular price book is kept, as published by *The Iron Age*, called Book A, and as invoices are received the prices are copied into this price book, and the name of the article, if not previously recorded, is recorded in the special index, as oftentimes the manufacturer's or selling agent's name is forgotten. This tells you where to find it, or to instruct a new man when a change of proprietors or employees occurs, and insures the means of obtaining rapid information of old or present prices and where to obtain new. The cost of the desk, cupboard, file and safe is saved many times by being prepared to meet the customers' wants, while it shows a customer that the proprietor thoroughly understands the business he is following.

Louisville.

(*From a Special Correspondent.*)

The Hardware trade of this city keeps up a remarkable volume, although a slight falling off may be noticed. But there never was a brisker demand on the jobbers for certain lines of goods, particularly Wire Fencing of all kinds. It is a remarkable change from 60 days ago, when the manufacturers were begging for orders, and now they receive beseechings and threats in abundance, for prompt shipments. Wire Nails are in better supply, and the manufacturers are keeping up with pressing orders very nicely. If the Wire Nail men would be wise, and curtail the output of some of their plants, as the big demand diminishes, they could expect prices to be maintained, which are now on a paying basis, but would not be so if any lower, especially if Bessemer Ores and Pig should hold their present footing. Low cut-throat prices do not cause an increase of consumption, it brings on a state, rather, of congestion and stagnation, hence the general public would not be benefited, unless the manufacturer can get some satisfaction out of the business too. Bar Iron keeps the steadiest thing on the market, very few changes having been made in prices for several months. The demand still keeps about up with the supply. The local mills find an outlet for all the iron they can turn out, most of which goes away from here to manufacturing consumers. Sheet Irons are in light demand, except for roofing purposes. There have been some large railroad contracts let for supplies of Spikes, Bolts and Nuts, but all at very close figures. The general outlook continues quite bright, and a prosperous year is promised, but with a slight cloud of unsettled financial matters threatening.

Hard Questions.

AMONG queer inquiries put to the Hardwaremen on occasions, some diverting examples in the experience of a correspondent of *Ironmongery* of London are given in a recent issue of that journal. Two unusual inquiries were, he says, recently made of him; one for "2 pounds of galvanic screws" and another for "a water-proof chimney." galvanized roofing Screws met the one want, and "a fire-proof bulge" the other. "Aggravating wire" was also asked for, which, being a new article in the experience of the merchant, he was compelled to cross-examine his customer, with the result of discovering that Barbed Wire was wanted. One needs to be a conundrum guesser to interpret every expression of a want put to a Hardware salesman, says the merchant above quoted. "My assistant came to me a few days ago, and with a bewildered look on his face, said a girl had been asking him for 'pork-pie gigglers;' 'Try her with Paste Cutters,' said I, and lo! that was right!"

THE Hart Mfg. Company have been incorporated at Troy, N. Y. The capital stock of the company is $50,000. The company are to manufacture cans, pumps, faucets, &c., in Troy. The directors for the first year are: William A. Thompson, James F. Cowee and Charles W. Hart.

Australian Mail Service.

R. W. CAMERON & CO., 23 South William street, New York, have issued the following convenient time table, which is of course subject to change, for the mail service for 1893 between New York, New Zealand and Australia, via San Francisco.

Name of steamer.	OUTWARD ROUTE. LEAVE New York.	LEAVE *San Francisco.	ARRIVE AT Auckland.	ARRIVE AT Sydney.	HOMEWARD ROUTE. LEAVE Sydney.	LEAVE Auckland.	ARRIVE AT San Francisco.	ARRIVE AT New York.	Name of steamer.
	1893.				1893.				
Mariposa	January 28.	February 3.	February 24.	March 1.	January 23.	January 28.	February 16.	February 21.	Monowai.
Monowai	February 25.	March 3.	March 24.	March 29.	February 20.	February 25.	March 16.	March 21.	Alameda.
Alameda	March 25.	March 31.	April 21.	April 26.	March 20.	March 25.	April 13.	April 18.	Mariposa.
Mariposa	April 22.	April 27.	May 18	May 23.	April 17.	April 22.	May 11.	May 16.	Monowai.
Monowai	May 20.	May 25.	June 15.	June 20.	May 15.	May 20.	June 8.	June 13.	Alameda.
Alameda	June 17.	June 22.	July 13.	July 18.	June 12.	June 17.	July 6.	July 11.	Mariposa.
Mariposa	July 15.	July 20.	August 10.	August 15.	July 10.	July 15.	August 3.	August 8.	Monowai.
Monowai	August 12.	August 17.	September 7.	September 12.	August 7.	August 12.	August 31.	September 5.	Alameda.
Alameda	September 9.	September 14.	October 5.	October 10.	September 4.	September 9.	September 28.	October 3.	Mariposa.
Mariposa	October 7.	October 12.	November 2.	November 7.	October 2.	October 7.	October 26.	October 31	Monowai.
Monowai	November 4.	November 9.	November 30.	December 5.	October 30.	November 4.	November 23.	November 28.	Alameda.
				1894.					
Alameda	December 2.	December 7.	December 28.	January 2.	November 27.	December 2.	December 21.	December 26.	Mariposa.
		1894.					1894.		
Mariposa	December 30.	January 4.	January 25.	January 30.	December 25.	December 30.	January 18.	January 23.	Monowai.

*Or immediately after arrival of London mail at San Francisco.
Mails close at New York at 6.30 p.m.
Mail time between Sydney and Melbourne, 20 hours. Adelaide, 40 hours.
Letters by this route should be marked "Via San Francisco."

Prize Competitions

$25.00.

Prize Competition No. 18.

SUBJECT:

The Extent to Which Merchants Should Devote Their Attention to Outside Interests.

This competition is designed to call out views as to the desirability of merchants taking prominent part in the local interests of the place and as to how much time can thus be spent to the advantage of their business. Among these interests may be mentioned school matters, industrial development of the town or city, elections, boards of trade, railroad projects, good roads, manufacturing interests, public improvements such as water works, sewerage, gas and electric lighting, street railways, &c. Practical examples will add interest to the discussion. It will probably be generally agreed that attention to such matters increases the influence of the merchant in the community, and in that and other ways contributes to the success of his business, while at the same time it is a question as to how much time should be given to them. The subject is thus a broad one, covering the question as to the position which the merchant should occupy in regard to the public interests of the community.

This competition will remain open until April 22, 1893.

Those intending to compete are reminded that it will not be necessary to write long essays, but that comparatively brief and business-like answers will be favorably regarded as meeting the purpose for which these competitions are announced.

The following prizes will be awarded:

First prize	$12.50
Second prize	7.50
Third prize	5.00

The prizes will be awarded for answers which in the judgment of the committee of award are most suitable for publication and of the most general interest. We reserve the privilege of extending the time on any competition in case the contributions received are not of sufficient number or merit for the committee to award prizes. These competitions are open to every one, and it is hoped that there will be a general response from business men. We shall have the privilege of publishing any or all of the contributions received.

Replies are to be received not later than April 22, 1893. They should be addressed as follows:

DAVID WILLIAMS,
96–102 *Reade street,*
New York.
Prize Competition No. 18.

The committee to whom the contributions in Prize Competition No. 4 were referred have awarded the prizes as follows:

First Prize to BERNARD B. NEAL, New York.

Second Prize to J. E. BACKENS, Eureka, Cal.

Third Prize to G. B. KORBETT, New York.

Other Competitions which have closed are now in the hands of the Committees of Award, who are giving careful attention to the claims of the different contributions. From the number of these and the evident merit of not a few of them, we are assured that a great deal of valuable information and suggestion will be put at the disposal of the trade.

The Weekly Prize Competitions noted below are now before our readers and remain open until the dates named:

No. 15. Closing April 1.

Suggestions in Regard to the Sale of Athletic and Sporting Goods.

No. 16. Closing April 8.

Three or More Rules to be Observed in Buying.

No. 17. Closing April 15.

How Merchants Should Treat Traveling Salesmen.

No. 18. Closing April 22.

The Extent to Which Merchants Should Devote Their Attention to Outside Interests.

Another subject will be announced in our next issue.

Axe-Handle Rack.

WE ARE indebted to S. J. Smith of Miller, Smith & Co., Chadwick, Ill., for a sketch of the Axe Handle rack shown in Fig. 756. The post, which is 38 or 40 inches long,

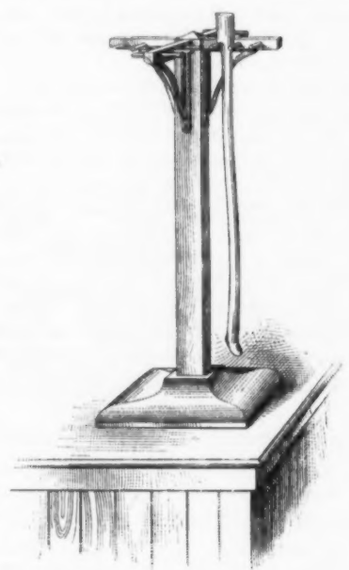


Fig. 756.—Axe-Handle Rack.

stands upon a base, the whole designed to stand on the counter. The cross pieces at the top of the post are held in position by brackets and have pegs or prongs 1¼ inches apart, between which the Handles are hung. The racks are made in three different sizes.

Effective Wall-Case Displays.

THE SPRINGFIELD HARDWARE COMPANY, Springfield, Ohio, advise us that they endeavor to arrange goods, especially those which bear a good profit, in so effective a manner as to claim the attention of customers entering their store. The accompanying illustrations give an idea of their manner of doing this, and indicate that they believe the time and labor required is well expended. A wall case near the entrance is devoted to Cutlery and fancy goods, as shown in Fig. 757. First are Knives and Forks, sampled on the original boxes, standing on shelves and so arranged as to present a uniform appearance. In the next apartment are Razor Strops, Razors, Shaving Brushes, Key Chains, Ticket Punches, Police Nippers, &c. In the next space are arranged Scissors and Shears, the larger ones in the center diminishing in size toward the edges. Razors occupy the corners at the top. The next opening contains Razor Strops, Brushes, Razors and Traveling Toilet Sets. To the right of these, though not shown in the cut, are shelves containing Table Cutlery, arranged to correspond with the shelves at the other end of the case. This arrangement of the case results in Table Cutlery on shelves at each end, and three apartments with glass sash in the center, making a pleasing and uniform appearance. The part of the center showcase nearest the door contains Scissors and Shears arranged in piles, one Shear on the top of the other. These are held in place by upright wire pins passing through the openings in the handles. The other part of the showcase contains Pocket Knives, sampled on their original boxes. Fancy Tea Kettles, Stands, &c., are shown on the top of the showcase, and also above the wall case. Another wall case, as shown in Fig. 758, is devoted to Bicycle Locks, Guns, Revolvers, Fishing Tackle, Dog Collars, Whistles, Calls, Wrenches, Jointed Rods, Nets, &c. Above these are Fishing Poles suspended by cord from the platform above, Fig. 759. Electrical goods are displayed in a section of shelving, Fig. 760, with a battery bell and push button in working order. Planes are shown, in Fig. 761, on inclined shelving with rods in front to prevent them from sliding off. These are adjoining the shelving containing the Electrical goods. Shelf Hardware is sampled on wooden shelf boxes, while under the ledge are drawers for Chisels, Braces, Squares, &c. The business was established in 1840 and incorporated in 1890.

Fig. 757.—Display of Cutlery and Fancy Goods.

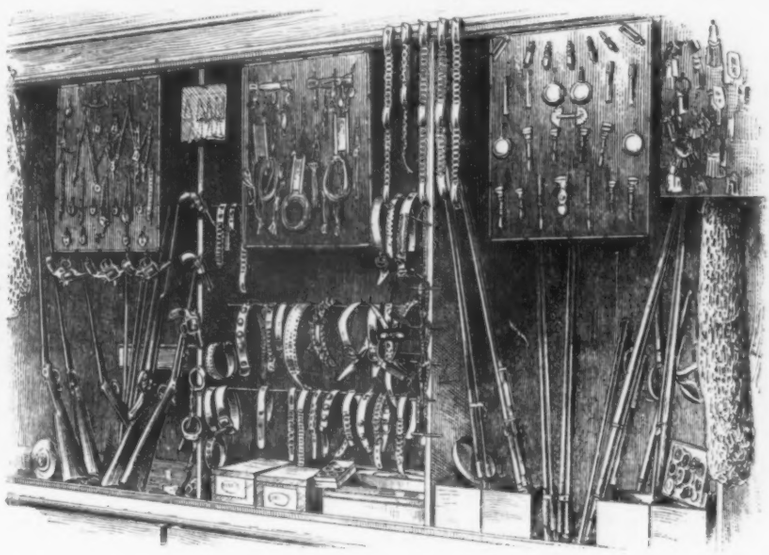


Fig. 758.—Sporting Goods, Fishing Tackle, &c.

Waste in the Store and How to Avoid It.

FIRST ARTICLE.

BY W. T. WARSOP.

THIS IS A SUBJECT worthy of attention, as the losses which occur to the dealer in the course of the year, from what may be termed waste, are considerable.

One of the first items is over weight and measure. Good

WEIGHT AND MEASURE

may be due the customer, but need not run to excess, and the salesman who makes a practice of throwing in a little more after weighing correctly is working against the interests of his employer, and if continued in will easily lose from 1 to 2 per cent. of the net profits for him. Very often this overweight and measure are given by salesmen who are not accustomed to weigh and measure goods, and it would be to the merchants' interest to give them a few lessons to perfect them in weighing and measuring goods.

Let them take 100 pounds of some article and weigh it up in 2, 3 and 5 pound packages so carefully as to make the requisite number of pounds. I think the result will surprise them.

OMISSION TO CHARGE

goods sold on credit is something that has cost most dealers quite a sum during their business career. Various reasons would doubtless be given for this should the salesman be questioned, but a very common reason is because it is not quite convenient to step to the desk to make the charge.

This could be corrected in a great measure if the salesman was obliged to carry a memorandum book for that purpose in his pocket, and to make the charge on same so that it will not escape his attention until he has an opportunity to report

or make charge himself on the proper book.

Neglect to charge goods will also occur when the customer uses a passbook; the charge often made on the passbook is neglected on the store book. The way to avoid this is to first make the original charge on either of the books mentioned before, then copy same into the passbook.

KEEPING BOOKS POSTED.

Losses occur from neglect to keep books posted. A customer calls for the amount of his account; the merchant turns to his account on the ledger and gives him the amount, but finds in a few days (or sometimes weeks) in posting that there are a few more items that should have been added to his account, and these items, if small, are often lost, as the customer, if spoken to about it, refuses to pay, or does so unwillingly, or his trade may be lost because the customer is not a regular one.

A TRIVIAL MATTER.

There are many instances, too, when a thoughtless clerk has purloined from his employer goods for his own use. At first it may be a trivial matter, a cheap Rule, Pocket Knife or other small article, but if the practice is not stopped it soon ends by his taking something of more account. Merchants should insist upon being consulted when clerks want goods, and should, if the goods are to be charged or paid for, attend to the matter personally.

MARKING PRICES.

Many merchants lose because of failure to mark goods, thinking they can remember the cost price. The custom of not marking goods is a poor one, for if the proprietor should remember prices himself (which is doubtful), they are very apt to be offered for sale by a salesman who is obliged to guess at the price, and many times does not get cost for the goods. The best plan is to have all goods marked, either on the article, box, package, or by list prices put up in some convenient place.

COLLECTING.

Losses will sometimes occur by not collecting for all goods sold for cash. Several articles may in turn be wrapped up as they are purchased, and the clerk in adding up the amount of the purchase overlooks some of the articles, thus failing to get pay for them. This would not happen so often if each article was itemized separately in figuring up the amount, after which the goods should be counted and checked off.

PACKAGES OPENED.

Many salesmen use goods about a store as if they cost nothing, and new tools are allowed to become soiled, packages of goods opened and part used and part left to spoil, such as Paint, Colors; Putty left to become hard; Glass left where it is liable to get broken, and are wasteful in many other ways. Merchants should insist upon order in the store and should be consulted in regard to the use of new tools and goods liable to become damaged, as all goods of this character, if they are not entirely spoiled, must be sold at a sacrifice.

Fig. 759.—Samples of Fishing Poles.

GOODS AT THE DOOR.

Goods are often stolen when placed outside the store and are neglected until darkness comes on. A practice should be made of bringing in all goods that are set out each day at an early hour.

SHORTAGES.

Loss sometimes occurs because invoices of goods are not looked over by the purchaser. There is willful waste in salesmen throwing in with goods to be fastened a handful of Screws, Bolts or Nails because it is too much trouble to count them.

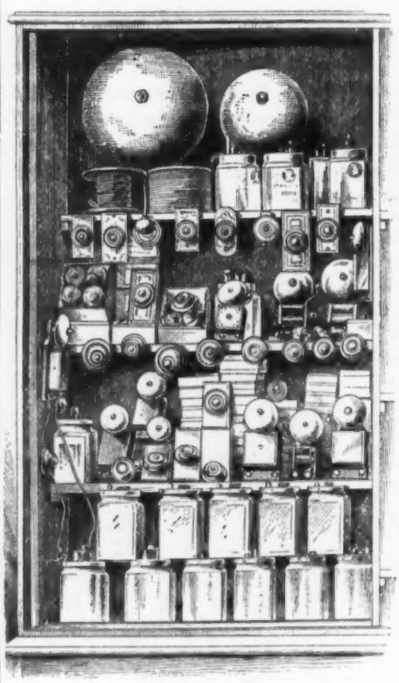


Fig. 760.—Electrical Goods.

LENDING TOOLS.

Hardware merchants are sometimes censured because they will not lend tools that persons wish to borrow. Unfortunately he cannot say he has none, for all around, displayed to good advantage, are Saws, Hammers, Axes, Wrenches, Screwdrivers, Squares, Plyers, Bits, Braces and numberless other things which the borrower wants to use, will not injure and will return in a minute! Some of these may be lent, but should be charged to the person and marked loaned, and if not returned to be paid for the same as if purchased.

Fig. 761.—Plane Display.

UNDERESTIMATING COST.

The article of Mica is often sold at a loss as it is bought by weight and sold by the light. A good way to arrive at the cost and selling price is to take each package upon arrival and split it into sheets of the right thickness for use, throwing out any which may be too thin or broken, then weigh and count, dividing the cost per pound by the number of lights.

MEASURE A BARREL.

There are losses from goods bought by weight and sold by measure, such as Oil, and if the dealer will take the trouble to measure a barrel of Linseed Oil he will find it often run short from 3 to 5 gallons if a clean measure of standard size is used. This means a loss to him unless he uses a measure that will hold just the number of pounds he buys for a gallon, which is, I think, 7½ pounds.

The losses that occur from

SHOPLIFTING

by those who visit the store in the guise of customers are considerable. This class of thieves succeed best in stores where there is not much attention paid to customers. The incomer should be promptly met at the moment of entrance and not left to wander about the store from one article to another; by so doing losses in this way would in many instances be avoided.

UNPROFITABLE BUSINESS.

The losses I have mentioned many merchants fail to take precaution against or

make allowances for them in their calculations as to their present worth. It frequently happens that when the year expires, inventory taken and accounts made up, the business, which seemed so flattering, is unexpectedly found to be unprofitable, or showing a profit much less than was expected.

Future prosperity will greatly depend upon the discovery of the cause of the discrepancy between calculated and actual results.

MONEY DRAWER.

Many small dealers use the money drawer as their private purse, taking from it whatever cash may be needed, and also take for their use articles kept for sale, and often neglect to make any charge of them. To such dealers, "Waste in the store and how to avoid it" is a subject which I am safe in saying would be of little interest.

Trade Topics.

Remittance Blanks.—From the secretary of a prominent Nail company we are in receipt of a suggestion that if remittance blanks contained the following provision,

If this is found correct no receipt is necessary. If not, report error at once.

time, trouble and expense of receipting and filing would be avoided. The trade will recognize the force of the suggestion and the saving of labor to both parties if the above method were adopted. The almost universal custom of paying accounts by check or draft obviates to a good extent the necessity of receipts as formerly.

Nail Cards.—A well-known house in South Carolina, referring to the correspondence published in our recent issues in regard to the Cut-Nail card, after referring specially to some of the letters in which criticism was made on the fact that averages are still considered, discuss the matter as it appears from their standpoint in the following terms:

As soon as the card appeared we felt sure the system of averages would continue in a modified degree, and for good reasons it should continue, to protect the purchaser of high-priced nails in his percentage on the cost.

Give It Up.—A correspondent sends us the following communication received from a collection agency with an inquiry as to what he should do in the premises:

We can see no way at present of realizing anything on the above claim. That this matter is pending, though in the hands of the first attaching creditor's attorney. That he will communicate with him and see what he is doing. That debtor has got away with all the property there was left and that proceedings were to be had against the sheriff. That the sheriff has since died and he is unable to say what has been done since his death.

THE HAMILTON-RANKIN HARDWARE COMPANY, Arkansas City, Kan., are placing their Screen Wire Holder on the market in an improved form. The construction has been changed, giving it additional strength. It is now made almost entirely of steel, and is proving very popular in its new form. The concern advise us they are running their factory full and are in a position to ship promptly all orders received. Their advertisement appears in another part of this issue.

Price-Lists, Circulars, &c.

SICKELS, SWEET & LYON, New York: Hardware, Cutlery, Farm and Garden Tools. Catalogue No. 5, spring edition, 1893, contains illustrations and prices of Garden and Farm Tools Children's Floral Sets, Lawn Mowers, Wire Stretchers, Hatchets, Pliers, Lemon Squeezers, Hair Clippers, Wringers, Hair Curlers, Hammers and Sledges, Revolvers, Screen Doors, Window Screens, Spring Hinges, Freezers, Locks, Knobs, &c.

FRANKLIN MFG. COMPANY, Rochester, N. Y., W. H. Jacobus, 90 Chambers street, New York, agent: Lumber, Oil and Lithographic Crayons, Shipping and Marking Pencils for all purposes. Illustrations are shown of Venetian, Lumber, Lumber and Shipping, Oil Shipping, Oil Checking, Official and Lithographic Crayons. Crayons are put up one dozen in a box, also in trays containing an assorted half gross, of black, blue and red.

THE WHITMAN & BARNES MFG. COMPANY, Cincinnati, Ohio: Mower Knives, Reaper Sickles, Sections, Guards and other Agricultural Implement supplies and specialties. An 1893 catalogue of 200 pages illustrates and describes these goods, with prices. Among the specialties are noticed Spring Keys and Colters, Thresher Teeth, Twist Drills, Oil Engines, Drop Forgings, &c.

BRYDEN HORSE SHOE COMPANY, Catasauqua, Pa.: The Boss Steel Horse Shoes, which are made in extra light and feather weight, also in regular weight, Horse and Mule Shoes. Twisted Shoes are also illustrated to show the perfection of quality of the material used, which is claimed to be tough and unbreakable as the best Swede's iron and as lasting as the finest grades of French and English steels.

THE CHICAGO STAMPING COMPANY, Chicago, Ill.: Spring and Summer Goods. Illustrations are given of Refrigerators, Ice-Cream Freezers, Oil Stoves, Oil-Stove Furniture, Bird Cages, Eave Trough Hangers, Oil Cans, Fishing Specialties, Meat Cutters, Milk Cans, Dairy Specialties, Coffee Mills, &c.

LALANCE & GROSJEAN MFG. COMPANY, 19 Cliff street, New York, supplement to catalogue of February 1, 1892, of 68 pages, giving such goods as are suitable for the export trade and intended for distribution abroad, showing selections from the general lines of Agate Ware, White Enamel Ware, Wrought Steel Hollow Ware, Plain and Retinned Bright Iron Ware, Wash Boilers, Pieced Tinware, Trimmings, Bright Iron Ware, Japanned Piece Ware and Wrought Steel Kitchen Sinks.

PORT HURON ENGINE & THRESHER COMPANY, Port Huron, Mich.: Separators, Straw Stacker, Traction Engine, Portable Engine, Stationary Engine, Oils, &c. A catalogue illustrates these goods in an effective and concise manner; the cuts, rather than elaborate explanation, being depended upon to convey the idea of excellence in the machines.

O. LINDEMANN & CO., New York: All kinds of Bird Cages. The 1893 catalogue contains descriptions, illustrations and prices of Japanned, Brass and Tinned Wire Cages for canaries, finches, red birds, robins, mocking birds, thrushes, bobolinks, blackbirds, parrots, squirrels, &c.

THE ANDREW B. HENDRYX COMPANY, New Haven, Conn.: Supplement catalogue of Brass, Bronze, Iron and Steel Chain. These Chains are made of standard size Wire and association (Hardware) size Wire. The supplement, under date March 25, 1893, illustrates Ladder Chain Safety Chain, Plumber's Chain. Single and Double Jack Chain, in Bronze, Brass, Steel and Iron. Brass and Bronze Chain is shown in colors. A comparative table of Wire gauges is given, including Wire numbers and American (Worcester), Old English, Stubs', and Brown & Sharpe's Wire Gauges.

CHICAGO SPRING BUTT COMPANY, Chicago, Ill., issue a miniature catalogue, which is a reproduction of their large one. These are furnished to those who handle their goods for distribution to customers. When desired the name of the local firm is printed in the blank space left for that purpose on the front page of the cover.

THE AKRON SPIRIT LEVEL WORKS, Akron, Ohio: The Akron Spirit Level. The vial of spirit as used in ordinary spirit levels is supported in a heavy glass tube by elastic end bearings The spirit vial and its protecting glass do not anywhere come in contact, except as they are connected through the medium of the bearings. The spirit vial has a circular mark upon it at the point where the bend of the vial is the highest, and the glass is adjusted to this mark.

A. F. SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo.: Spring Catalogue. The catalogue is 10½ x 15½ inches in size, and contains 92 pages. The issue does not enumerate fully all seasonable, but calls attention to some of the most salable and prominent leaders for the spring trade. Illustrations, descriptions and net prices are given of Fishing Rods, Reels, Hooks Flies, Spoons, Lines, Hammocks, Tents, Camping Outfits, Hay and Manure Forks, Hoes, Rakes, Lawn Mowers, Garden Hose, Pruning Shears, Sheep Shears, Pump Goods, Wheelbarrows, Curry Combs, Single and Double Trees, Freezers, Window and Door Screens, Bird Cages, &c.

THE JEFFREY MFG. COMPANY, Columbus, Ohio: Chain Belting, Elevating, and Conveying Machinery—Engineers, Founders and Machinists. A catalogue of 255 pages calls special attention to the addition of Chain lists of both Malleable and Steel Chains, which represents a large line of these goods; also, to the reduced price-lists. Illustrations are given of Elevators, Conveyors, Endless Freight and Package Carrier, Stone Crushing Plants, Coal Mine Equipment, Manila Rope Transmissions, Roller Chain, Detachable Chains, Special Chains, Tubular Steel Barrows, Mining Cars, Electric Mining Machinery, &c.

UNION MFG. COMPANY, New York, and New Britain, Conn.: Lathe Chucks and Drill Chucks. The catalogue is devoted to Combination Lathe Chucks, Universal Lathe Chucks, Independent Lathe Chucks, with reversible jaws; Chucks for brass finishers' use, Grinding Machines, Milling Machines, Screw Machines, Upright Drills, Cutting-off Lathes, Drill Lathes, and for Boring Mills, for car-wheel and other work. Special Chucks of every description are made to order. These goods are fully illustrated, with description and prices.

PULLMAN SASH BALANCE COMPANY, Rochester, N. Y.: Annual catalogue. This, their seventh annual catalogue, is devoted to Sash Balances, Car Window Balances, Wall case Balances, Showcase Balances and Steel Spring Balances. Illustrations, descriptions and prices of these goods are given.

JOS. S. LOVERING WHARTON, Philadelphia, Pa.: The Creasey Ice Breaker. A catalogue devoted to this machine shows it in various sizes, for power, hand, or power and hand machines. A detailed cut is given of the steel forged tooth used in those machines: the teeth being at-

tached to a cylinder and coming into contact with the block of ice. The capacity claimed for these machines is from 1 pound to 40 tons per hour.

THE WIRE GOODS COMPANY, Worcester, Mass.: Hook Supplement. The supplement catalogue is devoted to Steel Wire Coat and Hat, Harness, Fire Pail, Harness Saddle and Ceiling Hooks. These goods are illustrated in various styles, with prices.

THE POLAR CREAMERY COMPANY, Lafayette, Ind.: Catalogue illustrating Creamery Apparatus. The Polar Creamery, manufactured by this company, is made in several styles. In one no ice is used, but water alone is relied upon to properly cool milk for making batter. In another an ice chamber is attached as an auxiliary to the stream of water. These Creameries are of large capacity, with deep and shallow compartments, separated from each other. The deep compartments are for milk cans and the shallow compartments for pans of fresh milk to be slightly cooled before being placed in the compartment with cold milk. The shallow compartment is also intended to be used as a refrigerator for family use. Small Creameries are also made, and Creamery supplies are handled.

OLIVER F. DOUGLASS & Co., Lafayette, Ind.: Revised Price-List for 1893 of Wooden Pumps, with brass, porcelain or polished iron cylinders for open or driven wells. The firm also manufacture Chain Pumps, Chain and Tubing, Rubber Buckets, Water Pipe and Pump Fittings generally.

Krusius Brothers.

THE ABOVE FIRM, Manufacturers' of fine Cuttlery, Victoria Strasse, Solingen, Germany, commenced business in 1850. They now employ 12 salesmen in this country, canvassing the whole territory. They manufacture Pocket Cutlery, Scissors, Shears, Razors, Erasers, Tweezers, Manicure Specialties and Surgical Instruments. Their best goods are branded "K B Extra" in a circle. While many goods are made by what is known in Germany as House Industry, they have lately built another factory, their facilities now being such that they can produce all lines of goods dealt in under their own roof, if so desired. In their own works they employ about 120 men. Their trade is with Europe, South America and the United States, and they will soon have an agent in Australia. They now have branches in London and Sheffield, England, and also in France, Austria, Brazil and Russia. Their main office in this country is in New York, at 373 Broadway, while at 89-91 Bedford street, Boston, a suit of rooms has been fitted up for the purpose of handling the New England trade. These apartments consist of rooms 20, 21 and 22 in the Bedford Building, which have been arranged as a sample room, reception, parlor and general counting room. The walls are tinted, harmonizing with the quartered oak wainscoting. The furniture and sample cabinet, the latter occupying two sides, and an end of the sample room, are likewise of oak. Draperies, carpets, pictures and electric light service contribute to the attractiveness of the new quarters, which, on completion, were thrown open to business men and friends for inspection, the firm providing an excellent lunch for the occasion. This branch of the business is under the management of A. J. Silberstein, who canvassed the trade for four years as a salesman, until about a year ago, when headquarters were established in a single room at 33 Bedford street. The rapid increase in the business soon outgrew existing accommodations, resulting in the present facilities. A group of six photographs have been neatly mounted on a card 18 x 22 inches, the center one showing pictures of the manager and salesmen, surrounded by views of the manager's private office, salesmen's office, office and sample room and show room.

Trade with the Australian Colonies.

WE ARE INDEBTED to William H. Douglas of Arkell & Douglas, 95 Broad street, New York, with houses also in London, Sydney, Australia, and Port Natal, South Africa, for the following very interesting letter, embodying much important information in regard to export business with the Australian Colonies, its present condition and the opportunities afforded American manufacturers:

Having recently returned from a third business trip through the Australian Colonies, it affords me pleasure at the request of *The Iron Age*, a paper universally read abroad and so well known at home, to give a few facts as to export business and the conditions which govern it in the Colonies and this country.

Although Australasia is a large country, it is only beginning to be known to Americans, who do not realize its importance as a future trade center and who are surprised to hear that the cities of Melbourne, Sydney, Adelaide and Brisbane are not equaled by any other places in the world, of similar size, for splendid streets, fine Government and private buildings, warehouses, beautiful public parks, well laid out, and convenient suburbs, reliable system of cable tramways, and other enterprises which go to make cities attractive and pleasurable for residences. The citizens of the Colonies are not behind hand either in record as money makers and stand at the head of the world's list for *per capita* wealth.

The trade with America now amounts to several millions of dollars per annum, but by careful development will undoubtedly rapidly increase, and should command the attention of all manufacturers. The class of goods which go are so numerous that it will not be possible to mention same here, but I would state it includes Oil, Rosin, Plaster, Agricultural Implements of all kinds, Machinery, Hardware of all descriptions, also Woodenware, Barbed Wire, Canned Goods, Axes, &c.

While the colonies, as is natural, have extremely close business and social relations with the home country, England, they are fairly free from trade prejudice, and have shown a willingness to buy from the market offering the most reliable grade of goods at the best price, always considering quality and finish.

Our manufacturers, in view of the superior workmanship and quality of their goods, combined with the attractive manner in which they are put up and packed, should certainly take their proper place with England, France and Germany in foreign markets, unable yet to produce for themselves, and the question is often asked why we are so far behind.

The answer is easily made, as while our shipping facilities are not, as a rule, as good as those of other countries, and our Government is greatly to blame, and, unfortunately, undoubtedly backward in encouraging and providing means for foreign relations, the chief and great cause lies with the manufacturers themselves, coupled with the well-known fact that American goods are not known abroad to the extent they should be, nor is their sale pushed with the same determination as English goods. The truth is that our manufacturers have been protected too much, and with our population of some 60,000,000 helped by a yearly inpouring of a half to a million of people, they have been able to overlook the outside world and content themselves with our home market to a large extent; but production is gradually passing beyond our own requirements, and a much bolder bid should and must be made before long for a greater share in the world's export business. We believe our manufacturers are beginning to realize this, and more attention and thought is being given to this important matter. The buyers abroad are conservative, and brands once introduced and liked in any market are hard to drive out, and generally ordered again and again, and it therefore behooves our people to be alert and introduce their goods while these fields are developing, and their orders will increase as the places themselves grow. Shrewd and careful business firms will spend many thousands of dollars placing their output by travelers and advertising in our own new States and Territories, but if asked to spend one-third of the amount for export business, likely to show equal if not better results, will hesitate and usually refuse.

This is partially accounted for by the natural non-desire to risk an outlay so far away that it cannot be controlled readily, also the want of knowledge of conditions governing the business, but as usually the various commission houses take all responsibility and pay cash for any goods, the sale of which has been established and regular orders are received, our manufacturers should not feel that way, but once having established the fact they have a line of goods that will sell, see they are pushed regularly and with a proper system, and not, as is too often the case, only use spasmodic and irregular efforts. On this point of cash payment for goods I would say a few words, as exporters are restricted in their efforts to build up foreign business by the American system. The English and German manufacturers, recognizing the necessity of the exporter to save bank charges and all such costs, so as to land goods cheaply, will always sell to reliable export firms at four and six months' time against acceptance, or allow legal interest 4 per cent. for

cash. The usual bank exchange on the Colonies for a 90 days' sight bill averages 5 per cent., and therefore the English commission house, by taking his six months' time, can send his documents free and get back funds to cover by time acceptance is due, thus saving considerable, after allowing the buyer the cash discount, and also running practically no risk with his customer, as he will arrange cash payment on delivery of goods, while the American exporter, under the obnoxious system which our manufacturers, by combinations and trusts have built up of cash in seven and ten days to secure the cash discounts, finds himself forced to practically pay for all goods before vessels sail, and he must therefore charge exchange in full to his customer and thus pay tribute to this extent as well as to a foreign banker, as it is again unfortunate to have to admit that nine-tenths of all foreign bills drawn by American exporting houses pass through the hands of English and German banks. I might mention here that most goods going to Australasia are shipped by sailing vessels, also flying, as a rule, the English, German, Norwegian or other flag, and so bills are usually drawn at 90 days' sight, which, as vessels average on the voyage 100 days, makes the drafts mature about on arrival of ships carrying the goods. It will thus be seen we pay foreign nations a profit for carrying our goods, and profit for financing for us, and if even in spite of these restrictions and the indifference in many cases of the manufacturers to take up new ideas or help in any way the exporter, we do a large exporting business; how much it could be increased if these conditions were removed, as they undoubtedly will eventually be. The American manufacturers should, beyond question, wake up, as the old countries are pushing strongly and it will not do to fall behind. The commission houses' interest is certainly allied with the development of the business, and their efforts will be exerted therefore to their fullest extent to the furtherance of this desirable object.

The manufacturer, if he can afford the expense, should, beyond question, look over the field himself, and practically force his lines on the markets, but this naturally means in many cases an outlay beyond what the extent of the business will warrant, and therefore it is usually best for him to join issue with some reliable firm, who through their travelers and connections will push the sale, carry a line of samples, and gradually accomplish the desired result. We certainly advocate this being done, rather than taking up with independent travelers who go out representing at times many lines, and on so small a payment basis as to preclude the possibility of doing justice to many of the manufacturers, if any.

The idea has been broached, and it would be an excellent one for *The Iron Age* to work up, and that is the calling of a yearly convention of American manufacturers interested in foreign business, to meet the New York merchants similarly interested, and discuss the best plans and means for the furthering of mutual wishes to increase the trade, and beyond doubt this would have a beneficial effect and lead up to a solution of some of the obstacles which now stand in the way of the business, and create what is desirable, a more thorough understanding between all persons in this line of commercial enterprise. The Australasian Colonies just at present, owing to over-importations, land speculations, want of emigration, also trouble with the working men (controlled by trade unions) and a too free borrowing of money, are in a rather depressed condition and not making the headway they should, but these conditions will, it is hoped, alter for the better within a reasonable period, and with federation between the different provinces, which is now being discussed and must undoubtedly come about within a short time, renewed prosperity will result and the country will again push ahead.

Glass Rack.

WE ARE INDEBTED to the Hawks Hardware Company, Goshen, Ind., for a sketch of the Glass rack shown in Fig. 762, which is referred to by them as very convenient. A feature of this rack is the marking of sizes on the upper row of openings. The width only is marked above the openings, accommodating Glass from 10 to 24 inches wide; and spaces are also provided for small Plate Glass and odd sizes. The length of the Glass is designated on each partition, the markings running from 40 inches down to 18 inches. The smaller sizes of Glass are designated as usual, length and width of each size being marked above each opening.

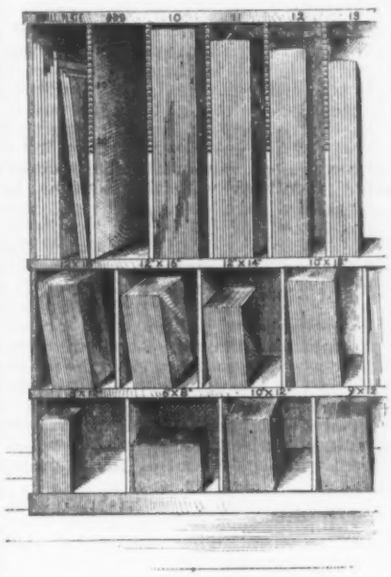


Fig. 762.—Glass Rack.

Bicycles.

THE EAGLE BICYCLE MFG. COMPANY, Torrington, Conn., manufacturers of high-grade Bicycles, issue an 1893 catalogue, which illustrates and describes the Eagle-Altair Nos. 1, 2 and 3, Improved Diamond No. 5, and Altair No. 4. The No. 1 is a road machine; No. 2 substantially the same as No. 1, with the addition of brake and spring saddle; No. 3, racer, Improved Diamond, road wheel, and No. 4, special road racer, weighing 30 pounds. Altair has been chosen as a distinctive and appropriate name to distinguish their 1893 models from Eagle designs of previous seasons.

SINGER & Co., New York and Boston, Singer Cycles, send an 1893 catalogue issued by the American branch of the company, which illustrates their line of wheels, as follows: Miniature, Miniature, Ladies'; Intermediate, Singer, Military; Special Singer, Royal Singer, Singer Challenge. Also special *Modile de Luxe*, in ladies', roadster, light roadster and racer. Tricycles in various forms and for different purposes are also shown.

THE MCINTOSH-HUNTINGTON COMPANY, Cleveland, Ohio, issue an illustrated catalogue of Crypto geared ordinary and front-driving safety Bicycles, for which they are the exclusive agents for the United States. Cuts are given of the gear from various points of view, also of the Crypto-geared ordinary and Crypto front-driving safety. The catalogue contains a large amount of information regarding the wheels, records of speed which has been made on these wheels, press notices, testimonials, &c.

THE TOLEDO BICYCLE COMPANY, Toledo, Ohio, in a neat catalogue show their Dauntless '93, Dauntless Racer, Scorcher and Dauntless Roadster. An illustration is also shown of their Dauntless plush-lined traveling case, which is referred to as being light and convenient, and as saving wheels from misuse.

WALBRIDGE & Co., Buffalo, N. Y., issue an illustrated catalogue of Bicycles and accessories. This is their second annual catalogue devoted to this line, and illustrates the Eagle-Altair wheels, Queen City Bicycles, and a large line of accessories. The dozen or more machines shown cover a range of styles and provide a variety of grades from which to choose.

HARBER BROS. COMPANY, Bloomington, Ill., issue a catalogue of Buggies, in which is included illustrations and descriptions of the Harber Safety Bicycle and the Bloomington Safety.

THE REMINGTON ARMS COMPANY, Ilion, and 313 and 315 Broadway, New York, issue a catalogue of Remington Bicycles. These include the Remington Full Roadster Safety, Light Roadster, Woman's Safety, Remington Racer, 1892 pattern Remington Safety, and Bicycle sundries. Detailed views are also given of various parts of the machines.

It Is Reported—

That P. R. Holt has opened a Tinshop in the Gibson Block, Londonderry, Vt.

That arrangements have been completed to open a Hardware store at Cone, Ohio

That Charles P. Nelson will soon open a Hardware store at Clinton, Mass.

That C. A. Tanner & Co's Hardware store at Oswego, N. Y., was destroyed by fire on the 16th inst.

That O. H. Lawrence, Waverly, N. Y., has sold out his stock of Shelf Hardware to A. A. Slawson.

That E. Pifer of Oaktown, Ind., has purchased the interest of H. V. McNary in the Hardware business of Clemens & McNary, Vincennes, Ind.

That the Hardware firm of Nearing & Howard, Kenney, Ill., have dissolved partnership, John Nearing retiring.

That burglars entered the Hardware store of Steidley & Butters, Gillespie, Ill., on the 12th inst., and stole about $100 worth of Cutlery.

That D. P. O'Connor has recently embarked in the Implement business at Harvard, Ill.

That Watson & Grospitz are a new Hardware firm at Springfield, Ill.

That B. E. Barrows, Hardware merchant at West Dundee, Ill., has sold out to J. W. Morse.

That J. W. Stout, Hardwareman, Topeka, Kan., has disposed of his business to Ferguson & Sanford.

That J. W. Clark is a new Hardwareman at Ashley, Ind.

That Schmitt & Owen are a Hardware firm who have recently engaged in business at Dowagiac, Mich.

That Woolet & Townsend, Hardware dealers, Lake Odessa, Mich., have dissolved.

That F. W. Otto, dealer in Hardware and Implements, Middleville, Mich., has sold out his Hardware stock.

That G. H. Willis, Chadron, Neb., has sold out his Hardware business.

That J. E. Weber, dealer in Hardware and Harness, Howe, Neb., has sold out.

That A. J. Lash has purchased C. Wilde's stock of Hardware, Stoves and Tin at Canton, Ohio.

That A. C. Peterson & Son have just commenced the retailing of Hardware at West Elizabeth, Pa.

That Edward F. Wardwell is the proprietor of a new Stove, Tin and Plumbing business at Woodstock, Vt.

That Willey, Crummey & Willey are the successors of A. C. Willey in the Stove and Tinware business at Aberdeen, Wash.

That the Stove and Tinware firm of Wentworth & Woodbury, Brewer, Maine, have been dissolved by the withdrawal of Charles E. Wentworth. A new firm have been formed to continue the business under the style of S. H. Woodbury & Co., the members of the firm being Samuel H. Woodbury and Samuel M. Woodbury.

That the Hardware firm of Kimball & Dunbar, Oneida, N.Y., have been dissolved by mutual consent, Mr. Dunbar purchasing his partner's interest.

That D. S. Decker of Wells, N. Y., has purchased a half interest in the Stove and Tinware business of John J. Hanson, Gloversville, N. Y. The firm style will hereafter be Hanson & Decker.

That W. O. Berkley has for the present closed up his Hardware store at Tupper Lake, New York.

That M. E. Loveland, Hardware merchant, Potsdam, N. Y., has disposed of his Hardware business, the purchasers being S. L. Clark & Son of Parishville and Boyd Clark of Potsdam. The new firm will take possession April 1.

That J. W. Jarvis, Hardware and Implement dealer at Hubbard Minn., has disposed of his Hardware stock.

That Reading & Kriesbach, Hardwaremen, Adams, Minn., have sold out to Redding & Noman.

That the Hardware firm of Laing & Andrews, Salamanca, N. Y., will soon be dissolved, and Mr. Laing will open a new store.

That Curtis & Swanson, Hardware dealers at Cavalier, N. D., have dissolved.

That W. T. Davenport, dealer in Hardware and Stoves, Albany, N. Y., suffered $300 damage by fire on the 17th inst.

That W. A. Covell, dealer in Hardware, Stoves and Tin, Albany, Wis., has been succeeded by Covell & Putnam.

That Cambridge, Pa., has a new Hardware firm under the style of Smith & Wilber.

That the Geo. Tritch Hardware Company's establishment at Denver, Col., was broken into by burglars on the 14th inst., and $400 worth of silver plated ware and cutlery stolen.

THE Standard Mfg. Co., Pittsburgh, manufacturers of Bathtubs and Plumbers' Supplies, recently made a shipment to Salt Lake City, Utah, of 12 Enameled Bathtubs of special design, which will be placed in the Mormon Temple of that city. These Tubs were finished in Onyx and are 6½ feet long and 3½ feet high.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

The distribution of various lines of Paints and Colors has shown improvement that should come about in the natural course of events at this season of the year. The turn for the better in this particular is not such as would arouse any remarkable enthusiasm, but, nevertheless, affords no little encouragement, since it bears very good evidence that while the extended winter has checked early spring season operation to greater or less extent, a heavy consumption is now under way that is morally certain to result in a lively trade during the next two months at the least. Special requests for early deliveries of staple lines of goods are significant in this connection, since they have not only become numerous of late, but afford convincing evidence of decided increase in the volume of consumption in this city and immediate vicinity since the middle of the month. Interior trade is, as yet, a little backward, owing doubtless to the poor condition of country roads, but all advices indicate that true springlike weather will effect a decided change for the better. Few changes in prices have taken place and the market is at present bare of sensational or other disturbing feature.

White Lead.—Except that crude material is higher in price and not at all freely offered, there is no new feature to note. Orders for the pigment are filled in the usual way, and, according to most accounts, are more liberal just now than they have been for some time past. Reports of irregularity in prices for old-process Lead manufactured by concerns not identified with the National Lead Company have circulation, and rumor has it that the official list for the combine brands is still deviated from. However, the price cutting would appear to be confined chiefly, if not wholly, to jobbers, the majority of whom seem content with filling small orders at a slight margin over cost of large lots as long as the special offering helps along the sale of other goods. Mixed Leads are holding their own fairly well in the general distribution, but are moved out at irregular prices, the average of which is somewhat below that of the corresponding period last year.

Zincs.—Nothing new has transpired regarding the alleged irregularities in prices of American Oxide, but surface indications are strong that the list prices are nominal, rather a fair reflection of actual market value where business involving round lots is concerned. Orders have been coming in somewhat more freely the past week. Deliveries on old contracts are larger also. There is, however, enough supply to go around at present and liberal production also. On high-grade product, intended to compete with foreign Oxide, prices have been reduced to 5¾¢ @ 6¢, f.o.b. factory. The list on imported Zincs is unchanged, but sales at concessions therefrom are not exceptional.

Red Lead and Litharge.—A slightly better business has been doing in Red Lead at the old line of prices. High-grade Litharge is still a little slow, but for glass-makers' quality the demand is better, and some good-sized orders for future delivery have been placed.

Colors.—Competition in some lines of Dry Colors is keen, with the effect of disturbing values. For example, French Carmine is said to be available at 75¢ @ 80¢ below the American combine quotations; that the association rates for Quicksilver Vermilion are shaded considerably by outside manufacturers, and that something similar is experienced among handlers of Paris Green. Other goods are somewhat variable in price, but, generally speaking, competition is temperate and the movement in prices narrow. Oil Colors and Ready Mixed Paints have enjoyed somewhat freer sale, chiefly at about the former line of prices.

Miscellaneous.—There have been no new developments in the market for Chalk, and prices are still nominal to a great degree. Whiting and Paris White are taken to a very fair extent for future shipment at old prices. Barytes, Terra Alba and Clays generally remain without radical change.

Oils and Turpentine.

The market for most of the prominent lines of Oils directly affected by the movements of prices for Lard and inferior Greases has been rather weak and is unsettled at the present time. This is due in a great measure to natural reaction in the price of Lard, but partly to curtailment of consumption brought about by late extremely high prices. The goods that have suffered the most are Lard, Cotton Seed, Olive and Cocoanut Oils, all of which are still comparatively high and difficult to sell in other than ordinary jobbing quantities. Linseed Oil stands out prominently as an exception, and, having the support of light stocks of crude products, nearly all varieties of Fish Oils are firm, in the face of rather slow general demand.

Linseed Oil.—Distribution increases somewhat as the spring season advances and the movement is now on a quite liberal scale, although the largest buyers still incline to a very conservative course owing to their possession of pretty liberal supply purchased prior to the recent advance in prices. A particularly strong feature is that outside crushers are not competing vigorously and that jobbers are a great deal more backward about selling at any concession from the crushers' prices, even to their regular trade. In the position of the market for raw material there is still a basis for firmness on prices of Oil, and the volume of consumption of the latter also serves to brace the market.

Cotton Seed Oils.—The market for the more staple varieties has been rather dull at the lower level of value established last week and there are no signs at present of any decided turn in the immediate future. As a matter of fact it looks like a slow, waiting market. Low grades have been the weakest, being affected by the reaction in prices of nearly all soap-making material, but prime quality is readily obtained at 45¢ for crude, 53¢ @ 55¢ for Summer Yellow and 60¢ @ 61¢ for Summer White. The Union Oil Company, Providence, R.I. have made another reduction in price and now quotes as follows:

	Lots of 1 to 10 bbls.	Lots of 10 bbls. and over.
Pure Salad	62¢	60¢
Olive Flavored	62	60
Winter White	62	60
Winter Yellow	61	59

The above sold by weight, 7½ lb to the gallon.

Lard Oil.—With better supply of raw material and narrow outlet for their product, pressers have deemed it expedient to make a further shading of prices. At this writing they do not pretend to ask more than $1 ₱ gallon for ordinary parcels, and quote down to 98¢ on particularly desirable orders. The concession has thus far failed to stimulate business, and the market is at present very quiet.

Fish Oils.—There has been no movement in any class of crude product. Supplies are very moderate, and the few lots offered are held at stiff prices. All pressed and bleached products are very firmly held at old prices, but do not sell just now, except in ordinary jobbing quantities.

Miscellaneous.—Common Olive Oil in barrels is freely offered at 64¢ @ 65¢ on spot and 62¢ @ 63¢ for near future delivery. Cocoanut Oils slow at 6¼¢ @ 6½¢ for Ceylon and 7¢ @ 7¼¢ for Cochin. Demand is very slow.

Spirits Turpentine.—Under the influence of slow demand and liberal supplies prices have receded somewhat. Wholesale quantities were offered at 34½¢ for regular and 35¢ for machine barrels.

Dickson Transom Lifters and Openers.

The G. J. Dickson Mfg. Company, Albany, N. Y., for whom W. H. Eckert, 121 Chambers street, New York, and 506 Commerce street, Philadelphia, is general agent, are putting on the market goods illustrated herewith. Two styles of lifters are made, Premier and Champion, a cut of the former being given in Fig 1. It is explained that in these lifters there is no such thing as class, as without any change the lifter will work a transom either right or left hand, pivoted, hinged at the top swinging in, or hinged at the top swinging out, hinged at the bottom or at the top operating a deep recess, thus saving the cost and delay of sending for extra long brackets; also that needing no classes

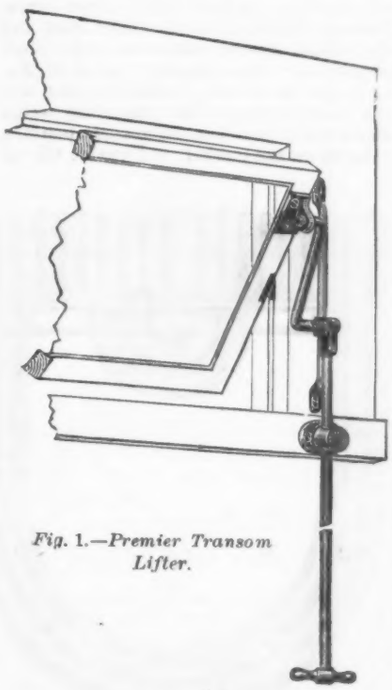


Fig. 1.—Premier Transom Lifter.

of differently constructed lifters at different prices, the same lifter at one price for each size and finish answers for all transoms pivoted or hinged horizontally. A recent addition for transoms hinged at the bottom is a torsion spring check, made of varied strength to suit the weight of the transom. It is remarked that these springs make the operation of a sash hinged at the bottom so easy that the smallest child can open or close the heaviest of sash, the check likewise preventing the sash from falling, and making the working of a sash hinged in this manner as safe as one that is pivoted. The locking device of this lifter is automatic, as it is stated a quarter turn of the rod fixes it securely in the lock, and an equal reverse turn unlocks it; the rod is not notched. Although the lifter is suitable for any kind of work, it is recommended principally for partition transoms, where the lock is out of reach and where transoms are placed very high and it is undesirable to have a long rod hanging down the wall. In such cases a short Premier can be used and operated

Fig. 3.—Self-Locking Transom Opener.

by means of a pole with a key on the end, to engage the T-handle of the lifter. The point is made that this feature makes it desirable for asylums, prisons and other buildings where it is necessary to have the device out of the reach of the inmates. The Champion lifter is the same in construction and in the range of adaptability as the one already described, except that instead of having an automatic lock, the rod is secured at any desired point by a thumb screw. We are advised that lifters of both styles have been adopted for use in the public schools of New York, Brooklyn, Philadelphia, and many other towns; among the recent school buildings fitted out with these goods is the new Central High School, Brooklyn, N. Y., conceded to be the finest public school building in America; also the Hotels Waldorf, New Netherlands and the Brooklyn Hotel and many others. The locking device for the adjuster, Fig. 2, is the same as that used on the Premier transom lifters, thus providing an adjuster which opens and closes a sash with one hand. The adjuster is also made with a swivel lock that adapts it for use on casement sash, pivoted on the side. The self-locking opener, Figs. 3 and 4, is for transoms vertically pivoted, hinged on the side to push out, or to pull in. The handle when raised to the horizontal is easily turned to the right or left, thus opening or closing the sash as desired. When released, the handle falls into a notch locking the transom in any position.

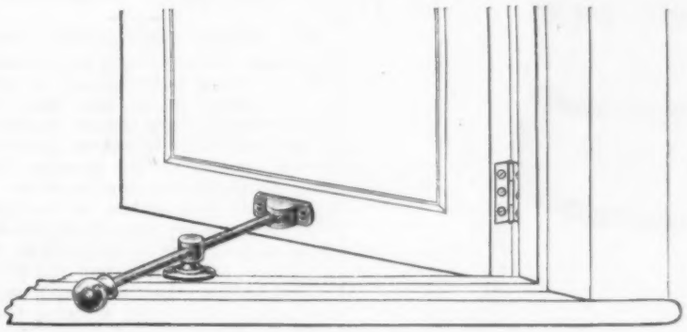


Fig. 2.—Casement Adjuster.

Fig. 4.—Enlarged View of Self Locker.

The manufacturers claim that the advantages embodied in these goods are peculiar to them alone.

The Queen Washing Machine.

The accompanying illustration is of a washer being put on the market by the Buckeye Churn Company, Sidney, Ohio. It is explained that the slats for rubbing are semi-circular quadrilateral in shape, with their inclines running from the extreme points of the rubber toward the center, with sheet-metal lining covering over half the slats; and that in the tub the slats are of similar form, with their incline running from the center of tub below toward the top. Thus, when the rubber is in its place, resting on the goods, the inclines are in opposite directions. It is claimed that by every motion of the lever the goods are moved in opposite directions; and reversing and dipping, as in filling and pressing a sponge, the sheet-metal lining over the rubber slats giving force to

The Queen Washing Machine.

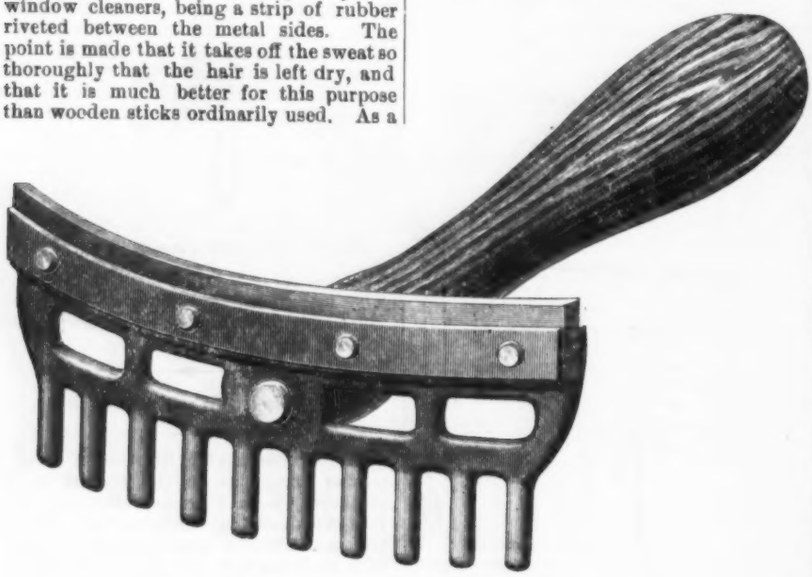
the water. These are some of the features claimed as being of especial advantage; also, that there is less friction on account of taking hold of the goods and not slipping over them. The manufacturers state that they are substantially made, rapid in operation and will not tear the clothes.

Aluminum Slate Pencils.

New uses are being found for aluminum by the Illinois Pure Aluminum Company, Lemont, Ill.; an aluminum slate pencil is their latest product. The pencil is light, and, the makers claim, indestructible; the marks are erased with a wet sponge. The pencils are about the length and size of an ordinary slate pencil, and are partially covered with assorted colored paper. A crease around the blunt end of the pencil affords a place for fastening a string.

Shedder, Mane Comb and Sweat Scraper.

F. E. Kohler & Co., Canton, Ohio, are putting on the market the above comb, as shown herewith. The scraper is 5½ inches wide, made upon the same principle as window cleaners, being a strip of rubber riveted between the metal sides. The point is made that it takes off the sweat so thoroughly that the hair is left dry, and that it is much better for this purpose than wooden sticks ordinarily used. As a shedder it is referred to as being unsurpassed, while the mane comb is included in the combination with but little added expense. Attention is called to the fact that neither of the articles in the combination interferes with the operation of the other.



Shedder, Mane Comb and Sweat Scraper.

The Wayne American Washer.

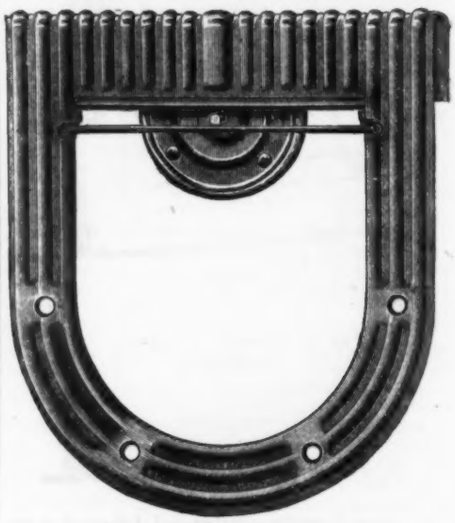
The Anthony Wayne Mfg. Company, Fort Wayne, Ind., are putting an improved form of washer on the market, as illustrated herewith. The difference between this and their Anthony Wayne washer consists in the American being wide on the bottom instead of on the top, as in the former. In this machine, it is stated, no nails are used inside the machine where they would be apt to come in contact with the clothing, and all nuts, washers, bolts, &c., that are used inside the machine are galvanized. The machines have solid corrugated staves and bottoms, which obviates the necessity of nailed cleats. The cover is hinged, and when thrown back lifts the gearing and inside working parts out of the washer.

The Wayne American Washer.

The Cincinnati Corrugating Company, Piqua, Ohio, issue a little pamphlet entitled "The Life of an Iron Roof; or, How Long Will It Last?" This gives information to those contemplating the use of iron or steel for building purposes. In this connection, the company remark that many persons who have not previously used corrugated iron are in doubt as to its durability, and as to whether it is adapted to their particular needs. The pamphlet is designed to furnish this information. The manufacturers also call attention to the fact that ten years ago there were not over a dozen iron roofing concerns in the country where there are now hundreds, and that this rapid increase is due to the excellence and cheapness of iron for building material and its lasting and fire-proof qualities.

The Uncle Sam Hanger.

The accompanying illustration represents the "pieceless body" hanger put upon the market by the Chicago Spring Butt Company, Chicago, Ill., with New York office 97 Chambers street. The manufacturers remark that great stiffness is gained by corrugating metals, and though the first impression upon handling the hanger is that it is too weak, its strength is apparent; as the principal strain comes across the top connecting the two rider bars, and the hanger has a continuous corrugated connection. The hanger is made of No. 13 gauge sheet steel, wheel included, and the manufacturers state that they weigh about one fourth less than corresponding hangers on the market, and enable a great saving in freight. The point is made that with this hanger they obviate the home-made appearance usual to barn door hangers.



The Uncle Sam Hanger.

The Monroe Refrigerator.

The Monroe Refrigerator Company, Lockland, Ohio, claim to have made some radical changes in the method of securing a low temperature in their large sizes of refrigerators without the use of crushed ice or melting the ice by salt or other artificial means, but with the greatest possible economy in the consumption of ice.

By their new system of refrigeration they claim to carry the cold dry air directly from the ice to the lowest parts of the refrigerator before it enters the provision compartments, thus securing a very low temperature at a great distance from the ice. It is explained that with their new system of refrigeration there is no passing of air, as the entire movement of the air in the provision compartment is upward, and there is never any mixture of flavors or tastes, and that if cream, milk and other delicate foods are placed at the bottom of the refrigerator, they received the pure, dry cold air directly from the ice before it touches other food. This system of refrigeration and dry air circulation is used in connection with their patent glazed earthenware lining, which it is claimed is free from absorption and metallic poisons, therefore as cleanly as a dinner plate.

Columbia Hose Mender.

J. W. Lander & Co., East Greenwich, R. I., are introducing through Alford & Berkele, agents, 77 Chambers street, New York, the hose mender herewith illustrated. By means of the right and left hand screw of the mender the ends of the hose are brought firmly together, and thus made ready for the clamp. The clamp is referred to as a feature peculiar to this mender and as a great improvement over wires used for completing the joint. The clamp is in two parts and requires only a screw driver in adjusting it, insuring, it is claimed, a perfect joint and preventing the hose from splitting at the ends where it has been mended. The menders are made in ½, ¾ and 1 inch sizes.

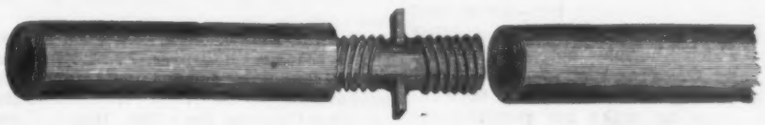


Fig. 1.—Columbia Hose Mender.

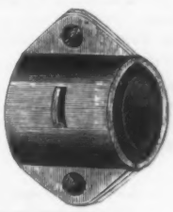
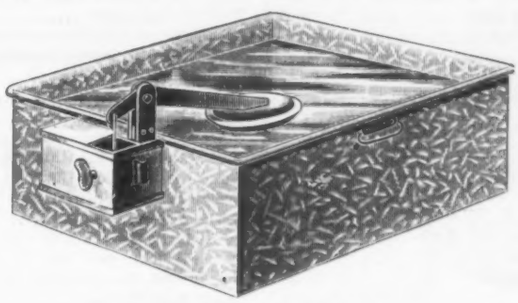


Fig. 2.—Hose Clamp.

The Gurney Alarm Catch Basin.

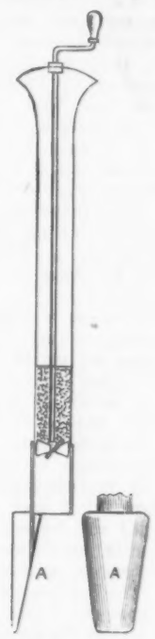
An illustration is herewith given of an alarm catch basin for refrigerators and ice boxes, manufactured and sold exclusively by the Gurney Refrigerator Company of Fond du Lac, Wis. It is made of heavily galvanized iron, with an alarm attachment to be kept wound up. Connected with the alarm is a float, which rests on the surface of the water in the basin. As the water reaches a certain hight it automatically raises the float and starts the alarm, which calls attention to the threatened overflow, and thus prevents the ruin of carpets, or the injury of ceilings below. The device is especially useful in connection with refrigerators having the waste pipe in the back, where the catch basin cannot easily be seen. It is made in two sizes, with a capacity of 12 and 16 quarts, respectively.



Gurney Alarm Catch Basin.

Weed Destroyer.

Shaw & Clancy, Racine, Wis., are offering the above tool, as herewith illustrated. The weed destroyer consists of a hollow galvanized iron handle, 40 inches long, 1¼ inches in diameter, with top and cap shaped as in the cut. A strong, sharp steel blade or shovel is firmly fastened to the end of the tube. A steel rod with a handle runs through the cap and tube, to the lower end of which is firmly attached a small wheel, not unlike a propeller wheel in shape, fitting inside of tube. In operation the handle is filled with common coarse salt and the knife pushed into the ground, severing the root of the weed. The cut end of the root is thus exposed, on to which a charge of salt may be dropped by a rotary or a slight lifting motion of the rod. The earth may be pressed back into place by the foot in passing on, the operation, it is stated, teking but a moment. Though not shown in the illustration, a lip or cover has lately been added to the lower end of the handle, which directs the salt down the back of the blade at the same angle at which the root is cut. This improvement obviates the necessity of pushing the tool to an upright position to expose the cut end of the root to the action of the salt, as formerly. The manufacturers claim that the handle of the tool holds over 200 charges of salt, and that the salt will kill the roots of thistle, burdock, dandelion, &c., without fail, and that they will not come back. The point is made that any person who has labored to exterminate these pests by digging at them day after day, season after season, without good results, will appreciate this tool.



Weed Destroyer.

Gem Cake Pan.

North Brothers Mfg. Company, Lehigh avenue and American street, Philadelphia, Pa., are offering the set of pans and cup as herewith illustrated. The pan, Figs. 1 and 2, is in two pieces only, the side being removable from the bottom, and is made of extra quality heavy bright plate. As seen in Fig. 2, the rim on the bottom of the pan is so made that when the sides are pushed on the bottom it is tight, and the makers claim that no batter can leak through or get in the joint. It will be noticed from letter D that the bottom of the pan where the cake rests is above the rim which supports the pan in the oven, so that the cake is elevated from the oven, to prevent its burning. The layer pans, Fig. 3, of which there are three in the set, come apart in the same manner as in the pan shown in Fig. 1, and are constructed upon the same principle. The cup is for measuring flour, sugar, &c., in receipts furnished with the set of pans. The pans are for baking delicate and other cakes without greasing the pans, and for removing the cake from the pans without tearing or breaking. It is explained that the pans permit of inverting the cake to cool when taken from the oven; prevent the cake from falling, and make cake larger and lighter than the ordinary style pan.

Fig. 1.—Gem Cake Pan.

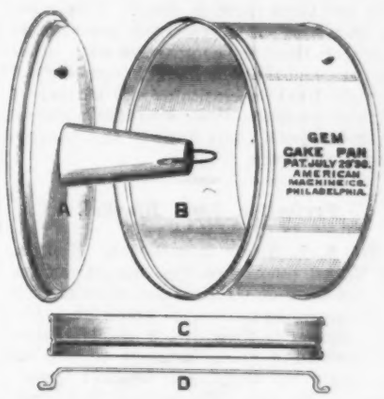


Fig. 2.—Gem Pan Apart.

Fig. 3.—Layer Pan and Measuring Cup.

New Warner Single-Track Hanger.

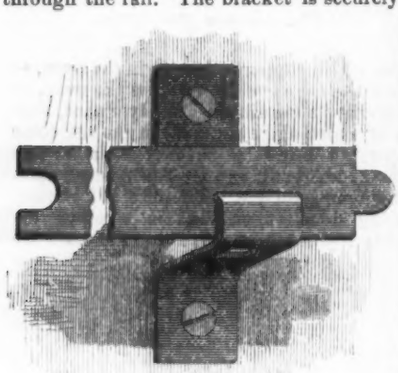
The accompanying illustration shows the fourth invention on parlor-door hangers of the Warner Mfg. Company, Freeport, Ill. It is described as having anti friction bearings, as being adjustable, noiseless, and as running on hard wood track. It is nickel plated, thus avoiding the soiling of workmen's hands, soiled hands being undesirable in finely finished houses. The hanger is made to run full 5 feet, which is referred to as a desirable feature. In

New Warner Single-Track Hanger.

hanging the door the base plate is screwed in place, and the door is coupled to the hanger by simply sliding the parts together, when the gravity lock of its own weight falls and locks them in place. This manner of setting, it is explained, saves many hours of time in comparison with other hangers, and that the hanger requiring but a single track necessitates the setting of but one partition true; also that a single-track hanger adjusts itself to any unevenness in the track.

Perfection Lock Bracket.

The A. L. Swett Iron Works, Medina, N. Y., are putting on the market an improved form of steel bracket door rail for barn doors, as illustrated herewith. It is very similar to their No. 0 steel bracket, but instead of being fastened to the rail by rivets or bolts, the bracket passes through the rail. The bracket is securely



Perfection Lock Bracket.

fastened to the rail by a lock, formed by a portion of the bracket being turned up and against the rail, equal in size to the hole from which the lock is turned, as shown on the under part of the bracket. It thus forms a rail adapted to grooved wheel hangers.

Talks About Trade.

"I never miss an opportunity to have a social chat with a customer," said a Minneapolis merchant who asks not to be quoted personally. "Now please note, I say an 'opportunity' for a 'social chat.' First of all, every time is not opportune. Sometimes my customers are in a hurry, or I am in a hurry; or they are repellent in manner (though I do not let that disturb me very much); or some other cause arises to prevent my chat. Now, I also say a 'social chat,' but without meaning precisely a chat on social topics. My chat is always based, directly or indirectly, on the goods I handle. In other words, while taking an interest, and a very lively interest, too, in what my customer's wants are, I let him or her—say, principally, her—know that we can both be interested in and by other goods which she may not want at that moment. Of course such goods are in my line and in my stock—always. I take infinite pains to make her purchase the starting point of the conversation which (sometimes, I confess, by very indirect methods) will lead us up to the point where I can name new goods, point out novelties, tell of improved housekeeping helps and conveniences. In other words my 'social chat' is 'shop talk.'

"Do you know I won't permit a clerk to say in that stereotyped hand-me down fashion, with which as customers we are all wearisomely familiar, 'Anything else this morning, madam?' I believe in shop talk, but I know also that the ordinary 'shop talk' is a nuisance and a bore to all save a few silly women and soft-pated clerks who have mastered a certain jargon which they think will appeal to the women whose trade they wish to win. I carry a general line—all kinds, I might say, of housekeeping supplies. There is not a week in the year but what I have something new in stock.

"Now I don't want a clerk to make himself interesting to my customers; I want him to make my goods interesting, and if he can't do that I have no place for him. There are scores of clerks in this town in demand because it is believed they carry trade with them. In many cases there is too much of the aroma of the 'masher' in the atmosphere around these young men. If I ever get one of them on my pay roll he either reforms (and reformation in such cases is as rare as a thunder storm in midwinter) or he goes—quick. The best clerks I have ever had are men whose chief interest lies not in themselves, but in the goods they sell; men who inform themselves about the stock and can give the customer not merely the points of value in the goods but the reasons why they are points of value; men who talk the goods as if they believed in them and loved them, and men who can, therefore, interest a customer because they themselves have the unction and the influence that come from enthusiasm in their business."—*The Hardware Trade.*

Aluminum Cooking Utensils.

A statement regarding aluminum cooking utensils, made by Joseph W. Richards of the Metallurgical Laboratory, Lehigh University, Bethlehem, Pa., in a letter to the Illinois Aluminum Company, Lemont, Ill., is given herewith. This statement is of interest to the trade, as it is the result of two years experience, and is as follows:

Speaking from an actual experience of two years with aluminum cooking utensils, I can state unreservedly that in point of lightness, cleanliness, durability and all-round adaptability to their purpose they leave nothing to be desired. They are the perfection of cooking utensils. As to durability, let me cite an instance:

Two aluminum boilers have been used in our kitchen for cooking all sorts of food in all sorts of ways, preserving, stewing fruit, etc., for two years. They have been used, washed, rubbed once, twice or three times a day for that time. They look as good as they did a week after we received them. Weighed on March 14, 1892, they weighed 1 pound 12½ ounces and 1 pound 11 ounces, respectively. Weighed to-night on the same scale they turn it to exactly the same weight, not a fraction of an ounce less. They both look good for many years' service.

CONTENTS.

Current Hardware Prices.

MARCH 29, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Peter Wright's.....11@11½%
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horse shoe brand.11@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise $3.00.....40&10%
Star.....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Common Augers and Bits.....70%
Boring Machine Augers.....70%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits.25&10%
Jennings' Pattern C ar Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&5%
C. E. Jennings & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30&30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $18.....35&40%
Stearns' No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25.....40&10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co.....30&10%
Double Cut, Hartwell's, ₩ gro., $5.00..25%
Double Cut, Douglass'.....40&10%
Double Cut, Ives.....60@60&10%

Hollow Augers—

Ives'.....
French, Swift & Co. (Beecher).....} 33⅓@33⅓ &10%
Douglass'.....
Bonney's Adjustable, ₩ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....30%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00	$7.50
First qual., other brands	6.50 to 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1....3¼@4¼¢, No. 2, 5¢@6¢
Nos. 7 to 14.....60&10%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
} 8% cash
Concord Axles, loose collar.....4½@6¢
Concord Axles, solid collar.....5½@7¢
Rational Tubular Self Oiling.....33⅓@33⅓&5%

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

No. 2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13½-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.00@$1.20
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro. $9.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous

Call.....45@50%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70@10@75&5%
Standard.....70&5@70&10%
Extra.....60&10@60&10&5%
N.Y.B.&P. Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.50@50&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....75&10&5@80%
Genuine Eagle, Norway, list Oct. '84..... 80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list).....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all Iron, Stanley's..... 60&10@60&10&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K. Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&5%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow..... 55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84 .....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓@35%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Braces—

American Bit Brace and Tool Co.,
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37 .....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Bail.....$1.10@$1.15
Barber s.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Bail.....net, $1.10@$1.15
Bartholomew s,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Bail, American.....$1.00@$1.10
Fray's Genuine Spofford s...50&5&50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting.	Inch	9	10	9x11
	Per doz.	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12, 50%
Queen City.....33⅓%

Buckets, Well—

Galvanized—

Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers Butchers'*

Butts—

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tlebout's.....5%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....60&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....
} 75@75 &10%

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indide Blind, Light.....
Loose Pin.....
} List Jan. 2 1893, 40@40&10%
Bronzed Wrought Butts.....50@50&10%

Calipers—See *Compasses.*

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S. S. & Co.: 5-gal., $2.10; 8-gal., $3.10; 10-gal., $3.35 each.....25%

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co.....₩ 100
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 47@50¢
Musket, Waterproof, 1-10's.....50@55¢
G. D.....27@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....55@55¢
Eley's D Waterproof, Central Fire..$1.00

Primers—

Berdan Primers, $1.00.....25
B. L. Caps (Sturtevant Shells) $1.00.....25
All other Primers, $1.20.....25

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....35%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....25
Blank Cartridges, 32 cal., $3.50.....25
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....25
B. B. Caps, Con. Ball, Swgd., $2.00.....25

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed.....
Plate.....} Brass.....55@55&10%
Shallow Socket.....} Others....60@60&10%
Deep Socket.....40&10%
Martin's Patent (Phœnix).45&10@50&10%
Tucker's Patent, low list.....45%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Giant Truck Casters.....35%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 6c.

Chain—

Trace, Wagon and Fancy Chains, List revised Oct. 15, 1892..60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.80	5.30	4.45	3.80	3.65	3.50	3.40	3.30

Less than cask lots, add ½¢@1¢ ₩ ℔
German Coil, list July 12, 1892.200@60@10%
German Halter Chain, list July 12, 1892. 60@60&10%
Covert Halter.....60&2%
Covert Traces.....35&2%
Covert Heel Chain.....50&2%
Galvanized Pump Chain.....₩ ℔ 5½@6¢
Oneida Halter Chain.....60@60&5%
Jack Chain, Iron and Brass, list March 10, 1893.....50&10%
Barnes' Reinforced Sash.....60&10%
Barnes' Victor Sash.....65%

Chalk—

White, case lots, ₩ gr 50¢, small lots.65¢
Red, case lots....₩ gr 67¢ small lots.75¢
Blue, case lots....₩ gr 75¢; small lots 85¢
See also Crayons

Chalk Lines—See *Lines.*

Chisels—
Socket Framing and Firmer

P. S. & W
New Haven
Witherby,
Mix
Ohio Tool Co. } .75&10@75&10&5%

Douglass .....75@75&5%
Buck Bros. 30%
Merrill .....60&10@60&10&5%
L. & I. J. White .....30@30&5%

Tanged and Miscellaneous.

Tanged Firmers .....50@50&10%
Butchers' .....$4.75@$5.00
Spear & Jackson's .....$5 to £
Buck Bros 30%
Cold Chisels, ₩ lb .....15@16¢

Chucks—

Beach Pat. .....each, $8.00 .....20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury .....each, $6.00, 30@30&5%
Syracuse, Bals Pat 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns—

Tinn Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—

R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati .....15&10%
Adjustable, Hammers .....15@15&5%
Adjustable, Stearn's .....30@30&10%
Stearn's Adjustable Cabinet and Corner .....30@30&10%
Cabinet, Sargent's .....70&10%
Carriage Makers', Sargent's .....75@75&5%
Carriage Makers', P., S. & W Co. .....40&10%
Eberhard Mfg. Co .....40&5@40&10%
Warner's .....40&10@40&10&5%
Saw Clamps, see Vises, Saw Fliers'.
Carpenter's, Cincinnati .....25&10%
Barnes' Machinists' Clamps 33⅓%

Cleavers, Butchers'—

Bradley's .....25@30%
L. & I. J. White .....20&5%
Beatty's .....40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W .....33⅓&5@33⅓&10%
Foster Bros 30%
Schulte, Lohoff & Co .....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16 .....55&5&5%
2d grade Norway Axle, ¼ & 5-16 .....65&5%
Superior Axle Clips .....66⅔&5@70%
Norway Spring Bar Clips, 5-16 .....60&5&5%
Wrought Iron Felloe Clips .....₩ lb, 5½¢
Steel Felloe Clips .....₩ lb, 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—

Hardware list .....60&2%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Chapman Mfg. Company .....50&10@60%
Medford Fancy Goods Co .....40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—

Fitch's .....50&10@50&10&10%
Rubber, per doz., $10.00 .....25%
American Curry Comb Co .....33⅓@40%
Kohler's Magic Oscillating .....₩ doz., $2.00
Kohler's Humane .....₩ doz., $1.75

Compasses, Dividers, &c.

Compasses, Calipers, Dividers .....70@70&10%
Bemis & Call Co.'s
Dividers 65%
Compasses .....50&5%
Calipers, Wing and Inside or Outside. 50&5%
Calipers, Double 60%
Calipers, Call's Patent Inside 30%
Excelsior 50%
J. Stevens & Co.'s .....25&10%
Starrett's
Spring Calipers and Dividers .....25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—

S. S. & Co.: 2-gal., $2.30; 3-gal., $2.60; 4-gal., $3.00; 6-gal., $3.75 each 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—

Sash—

Common .....₩ lb, 9@10¢
atent, good quality .....₩ lb, 11@12¢
White Cotton Braided, fair .....₩ lb, 24@25¢
Common Russia Sash .....₩ lb, 12½@13¢
Patent Russia Sash .....₩ lb, 13½@ 14¢
Cable Laid Italian Sash .....₩ lb, 19@20¢
India Cable Laid Sash .....₩ lb, 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White .....34¢
Sylvan Spring, Extra Braided, Drab .....39¢
Semper Idem, Braided, White .....27@28¢
Egyptian, India Hemp, Braided .....26¢
Massachusetts, White .....29¢
Samson—
Braided, White Cotton .....₩ lb, 37¢
Braided, Drab Cotton .....₩ lb, 42¢
Braided, Italian Hemp .....₩ lb, 40¢
Braided, Linen .....₩ lb, 56¢
Tate's Solid Braided—
Hercules, White .....₩ lb, 25¢
Hercules, Drab .....₩ lb, 30¢
Economy, Drab .....₩ lb, 27¢
Economy White .....₩ lb, 22¢
Quaswan Mills—
Braided, Giant, White, ₩ lb, 30¢ 20%
Braided Giant, Drab and Fancy, ₩ lb 35¢ 10%
Braided, Crown White, ₩ lb, 50¢ 50%
Braided, Crown Drab and Fancy, ₩ lb 55¢ 30%

Wire Picture—

Braided or Twisted .....80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers, Nut—

Table (H. & B. Mfg. Co) 40%
Blake's Pattern, ₩ doz., $2.00 .....10%
Turner & Seymour Mfg. Co 50%
Acme.
Japanned, ₩ gro., $30 .....50%
Nickel Plated, ₩ gro. $30 .....10%

Cradles—

Grain .....50&5&2@50&10&2%

Crayons—

White Crayons, ₩ gross .....7@8¢
D. M. Stewart Mfg. Co., Metal Workers', ₩ gross, $2.50 .....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gross, $2.50 .....25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—Meat—

Dixon's, ₩ doz.				40&5%
Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's, ₩ doz.				40&5%
Nos.			100	150
			$15.00	$18.00

Hale's Pattern, ₩ doz.				70@70&5%
Nos.	11	12	13	
	$27.00	$33.00	$45.00	

American						30%
Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise					25%
Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter .30@30&5%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$3.50	$4.00

Miles' Challenge, ₩ doz. .....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. 1, ₩ doz., $26.00 .....55&10%
Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

Beef Shavers (Enterprise) 20%
Little Giant (P. S. & W. Co.) 50%
Chadborn's Smoked Beef Cutter, ₩ doz., $66.00

Tobacco

Champion .....20&10@30%
All Iron .....₩ doz., $4.25
Nashua Lock Co.'s .....₩ doz., $18.00, 50@55%
Wilson's 55%
Sargent's .....₩ doz., $24.00, 55&10
Acme .....₩ doz., $20.00, 40%

Washer -

Smith's Pat .....₩ doz., $12.00, 20&10&10%
Johnson's .....₩ doz., $11.00, 33⅓%
Penny's .....₩ doz.,, Pol. $14; Jap'd, $16, 55%
Appleton's .....₩ doz., $16.00, 60&10%
Bonney's .....30&10%
Cincinnati .....25&10%

Dampers, &c.—

Dampers, Buffalo .....40&10%
Buffalo Damper Clips .....40&10%
Crown Damper 40%
Excelsior .....40&10%

Diggers, Post Hole, &c.—

Samson, ₩ doz., $34.00 .....25@25&10%
Fletcher Post Hole Augers, ₩ doz., $36.00, 20@20&10%
Eureka Diggers .....₩ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ₩ doz., $8.50@$9.50
Kohler's Little Giant .....₩ doz., $18.00
Kohler's Hercules .....₩ doz., $14.00
Kohler's Invincible .....₩ doz., $12.00
Kohler's New Champion .....₩ doz., $8.00
Scheidler .....₩ doz., $18.00
Cronk's Post Bars, ₩ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger .....₩ doz., $15.00
Gibbs National .....₩ doz., $12.00
Gibbs' Columbia .....₩ doz., $13.00
Gibbs' Imperial .....₩ doz., $7.50
Shimer's Hollow Handle .....₩ doz., $24.00, 50%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Springs—
See *Springs, Door.*

Drawers.

Money, ₩ doz .....$18@$20

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—

Blacksmiths' .....each $1.75
Blacksmiths Self-Feeding, each $7.50, 20%
Breast, P. S. & W .....40&10%
Breast, Wilson's .....30&5%
Breast, Millers Falls .....each $3.00, 25%
Breast, Bartholomew's .....each $2.50 25&10&40%
Ratchet, Merrill's .....20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's .....20@20&5%
Ratchet, Whitney's .....20&10%
Ratchet, Weston's .....20@25%
Ratchet, Moore's Triple Action .....25@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 .....20&10%
Automatic Boring Tools .....$1.75@$1.85
Chicopee Automatic Drill .....20&10%

Twist Drills—

Cleveland .....50&10&10%
Diamond, W. & B .....50&10&10%
Graham's Pat. Groove Shank .....50&10&10%
Morse .....50&10&10%
New Process .....50&10&10%
Standard .....50&10&10%
Syracuse (Meta list) .....50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—

Douglass Mfg. Co .....20@20&10%
Disston's 50%
Buck Bros 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles .....65&10%
No. 80 .....70&10%
Sargent & Co.'s
No. 1, Forged Blade .....60&10&10%
Nos. 20, 40 and 60 .....66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 .....60&20@70%
No. 2 .....60&10&10@70&5%
No. 3 .....60&5@60&10%
Nos. 4 and 00, Acme and Ideal .....50&5@50&10&5%
Stearns' .....25&10&5%
Gay & Parsons 25%
Champion .....25&10%
Clark's Pat .....50@33⅓%
Crawford's Adjustable 30%
Ellrich's Socket and Ratchet .....25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense .....₩ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits .....30&30&5%
Screw Driver Bits .....₩ doz., 50@75¢
Screw Driver Bitts, Parr's .....₩ gross, $6.25
Fray's Hol. H'dle Sets .....No. 3, $12.00, 45%
P. D. & Co.'s All Steel 50%
Cincinnati .....25&10%
Brace Screw Drivers .....25&10%
Buck Bros.' Screw Driver Bits .....27½&25%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch .....45&10%
C. T. Williamson Wire Novelty Co 50%

Egg Beaters—See *Beaters, Egg*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F.FF.
Kegs, ₩ lb	4½¢	5 ¢	2½¢
½ kegs, ₩ lb	4½¢	5½¢	2½¢
¼ kegs, ₩ lb	5 ¢	5½¢	3 ¢
10-₩ cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—

Door Lock .....Same dis. as Door Locks.
Brass Thread .....60@60&10%
Wood 25%

Expanded Metal—
List No. 5.

Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—

Mackrell's, ₩ doz., $1.00 .....20@20&10%
Van Sand's Screw Pat, $15 ₩ gr., 60&10%
Van Sand's Old Pat., $15 ₩ gr .....55&10%
Austin & Eddy No. 2008 .....₩ gr., $9.00
Security Gravity .....₩ gr., $9.00
Zimmerman's .....50&10%

Faucets—

Fenn's 40%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list 60%
Metallic Key, Leather Lined .....60&10%
Cork Lined .....70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots .....60&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined 50%
No Brand, Red Cedar (in bbls.) .....60&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ₩ doz., $36.00 .....20%
Lane's ₩ doz., $36.00 .....25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—

Derby and Cincinnati .....45&5%
Brewster .....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c. .....60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) .....75% (extra prices on certain sizes.)
American .....66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) .....60&10@60&10&5%
Arcade .....60&10&10&70%
Eagle .....60&10&10@70%
Other makers, best brands .....60&10&5@70%
Fair brands .....70@70&10%
Second quality .....75@75&10&5%
Heller's Horse Rasps .....50&7½@50&10%
McCaffrey's Horse Rasps .....50&10%
Chelsea Horse Rasps, Hand Cut .....50&10%
Arcade Horse Rasps .....60&10@60@10&5%
Trojan Horse Rasps .....60&10&5%

Imported—

Butcher .....Butcher's list, 20%
Stubs .....Stubs list, 25@30%

Fixtures, Grindstone—

Sargent's Patent .....70&10%
Reading Hardware Co .....50&10%
P., S. & W. Co .....50&10%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—

Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—

Saw—

White Vermont .....₩ gro., $9.00@$10.00
Red, Polished and Varnished .....₩ doz., $1.50, 35%

Screen, Window and Door—

Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons .....33⅓@ 33⅓&10%
Stearns' Frames and Corners .....25@25&10%
Cortland .....40@40&5

Freezers, Ice Cream—

White Mountain .....60@60&5%
Granite State .....65@65&5%
Arctic .....70@70&5%
American 60%
Buffalo Champion .....65@65&5%
Shepard's Lightning .....65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless .....60&10%
Giant 60%
Zero .....60&10&10%
Boss and Pet .....60&10&10&10%
Keystone, P., D. & Co., each, $1.50 .....20%
Standard .....60@60&5%
Standard Double Action .....60@60&5%
Expert .....65@65&5%
Model .....60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Funnels—

Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz 25%

Furnaces, Soldering—

Burgess No. 3 Gem tin reservoir $7.00
Burgess No. 3 Gem, Copper reservoir $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 12½@15%. ₩ 1000 ft.

Common Hemp Fuse, for dry ground $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground 3.85
Double Taped Fuse, for very wet gr 4.80
Triple Taped Fuse, for very wet gr 5.00
Small Gutta Percha Fuse, for water 7.50
Large Gutta Percha Fuse, for water 12.00

Gates Molasses—

Stebbin's Pattern .....80@80&5%
Stebbin's Genuine .....60&10&10%
Stebbin's Tinned Ends .....40&10%
Lincoln's Pattern .....70@70&10%
Weed's .....20&10%
Boss, ₩ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 .....60&10&10%

Gauges—

Marking, Mortise, &c .....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge $8.00
Barrett's Comb. Roller Gauge .....₩ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale .....₩ doz., $5.00
Without Scale .....₩ doz., $4.00
Wire, Wheeler, Madden & Co 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's .....10@20%
Wire, P., S. & W. Co .....10&10%

Gimlets—

Nail and Spike .....50&10&5%
Eureka Gimlets .....60&10%
Diamond Gimlets .....₩ gr $5.00
Double Cut, Shepardson's .....45@45&5%
Doub e Cut, Ives .....60@60&5%
Doub.e Cut, Douglass' .....40&10%

Glue—

e Page's Liquid .....25@25&5%
Upton's Liquid 35%
Improved Process .....25@25&5%
Dodd's Liquid Glue .....25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Fraser's .....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes .....₩ gr $9.50
Dixon's Everlasting, in bxs .....₩ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting .....10-lb pails, ea. 85¢
Lower grades, special brands, ₩ gr $5.50@$7.00
Axleine, tin boxes .....₩ gross $12.00
English Coach, wooden boxes, ₩ gross $8.50
English Coach, 5-lb tin pails .....₩ doz $3.50
Tiger, wooden boxes .....₩ gross $7.00
Tiger, 5-lb tin pails .....₩ doz $2.85

Grindstones—

Small, less than car load lots at quarry .....₩ ton $9.00 @ $10.00
Family, regular list 60%
Family, Cleveland Stone Co 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

Sewing, Brass Fer. ₩ gr $1.75
Pat. Sewing, Short. ₩ doz .....45@50%
Pat. Sewing, Long .....₩ doz $1.20
Pat. Peg, Plain Top. ₩ doz .....40@45¢
Pat Peg, Leather Top .....₩ doz 45@50¢

Halters—

Covert's, Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ¼-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters...33⅓%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co. / Humason & Beckley / Atha Tool Co. / Verree.....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—

3 ℔ and under...₩ ℔40¢ / 3 to 5 ℔.....₩ ℔36¢ / Over 5 ℔.....₩ ℔30¢ — 75&10@75&10 &5%
Wilkinson's Smiths.....10¼@11¢ ₩ ℔

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....₩ doz., $3.00

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Roggin's Latches.....₩ doz 30@35¢
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70&70&10%

Wood—

Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50
Hickory Firmer Chisel, large. ₩ gr 5.00
Apple Firmer Chisel, ass'd... ₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd.. ₩ gr 3.00
Socket Framing Chisel, ass'd. ₩ gr 5.00
— 40&10@50%
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....₩ gr 2.75
Auger, assorted.....₩ gr 5.00 / Auger, large.....₩ gr 7.00 — 50%
Pat. Auger, Ives'.....50&10%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—

Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati, Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Woody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co.
Blood's / Hunt's / Hurd's / Mann's / Peck's / Underhill's — 40 & 10 @ 50&5%
Buffalo Hammer Co. / Fayette R. Plumb. / C. Hammond & Son. / Kelly's / Sargent's & Co. / P. S. & W. Co. / Ten Eyck Edge Tool Co.
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind Hinges—

Parker.....75&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50..80@80&5%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 12, 13..75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible...70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1¼, 2, 2¼, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $0.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ doz $4.20, 60@60&10%
N. E.....₩ doz $7.80, 60@60&10%
N. E. Reversible ₩ doz..$5.60, 60@60&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₩ doz $4.90,60@60&10%
Automatic.....₩ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts...40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....60%
Reliable.....60%
Champion.....60%
— Extra 5@10% often given.
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ₩ gro., $30.....50&5%
Samson.....60@60& 10%
Wiles', No. 1, ₩ gro., $16; No. 2.....$13
Devore, No. 1.....₩ gro., $13.00
Rex.....₩ gro., $13.00
Freeport.....₩ gro., $12.00
Stearns' Noiseless Floor Hinge, ₩ set, $5.00.....20@20@30%

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10@50&10&5%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap... / 6 to 12 in., ₩ ℔.. 4¢ / 14 to 20 in., ₩ ℔..3½¢ / 22 to 36 in., ₩ ℔.. 3¢
Screw Hook and Eye.... / ⅝ in., ₩ ℔ 7½¢ / ⅝ in., ₩ ℔ 5½¢ / ½ in., ₩ ℔ 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Plate Hinges / "Providence" — 8, 10 & 12 in., ₩ ℔.....5¢ / over 12 in. ₩ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat / Am. Axe and Tool Co., S. & O. Pat.. — 70@70& 5%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....₩ doz $4.00

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....₩ doz $13....60%

Bit—

Extension.
Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%
Diagonal.....₩ doz $24.00, 40%
Angular.....₩ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₩ doz $4.00, 25%
Nicholson File Holders.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's List.... / Bird Cage, Reading..... / Clothes Line, Sargent's list — 60@10&10%
Clothes Line, Reading list, 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list, 55&10@60&10%
Coat and Hat, Reading, 50&10@50&10&10%

Wrought Iron—

Cotton.....₩ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples, Hooks, &c. See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard..60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—

Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Nolin's Grass.....₩ doz $2.25
Bush.....55@60%
Whiffletree Patent.....55%
Hooks and Eyes—Malleable Iron. 70&70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition.....75&75&10&5%
Standard.....60&10&10&70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee.....50&10@60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Sad—

From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
Self-Heating.....₩ doz $8.00
Self-Heating Tailors'.....₩ doz $18.00
Enterprise Irons, list Jan. 17, 1893...30%
Enterprise Star Irons, list Jan. 17, '93..30%
Crown.....60&10@60&10&5%
Ideal Irons, new list...60&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ₩ ℔.....3@3¼¢
Chinese Laundry (N.E.Butt Co.).3¼¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....₩ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 35&2%
Tinker's Dread. ₩ doz $1.75; ₩ gro. $18

Pinking—

Pinking Irons, ₩ doz., 55@60¢

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....₩ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's Aa A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₩ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—

Witherby / P., S. & W. / Mix / New Haven / Merrill — ...75@75&10&5%
Douglass.....75&75@5%
Watrous.....10&10@25%
L. & L. J. White.....30&5%
Bradley's.....35%
Adjustable Handle.....35@35&5%
Wilkinson's Folding.....35@35&5%

Hay and Straw—

Lightning, from jobbers....$3.00@$3.00
Wadsworth's.....40&7½@40&10%
Carter's Needle...₩ doz. $11.00@$11.50
Heath's.....₩ doz. $13.00@$13.50
Nolin's Hay..₩ doz. $7.00@$8.00%

Mincing—

Am. (2d quality), ₩ gr., 1 blade, $7 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ doz., Single, $2; Double $3 45@50%
Knapp & Cowles.....50&10&10%
Buffalo Adjustable....₩ doz. $3.00, 33⅓%

Knobs—

Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l...$2.00@$2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&15%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.

Davies Extension and Single.....20&5%

Ladies—

Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Regular, with Guard.....₩ doz $3.50
O. K., with Guard.....₩ doz $3.75
Side Lift, with Guard.....₩ doz $4.00
Square Lift, with Guard.....₩ doz $4.25
Anti-Friction, with Guard....₩ doz $4.50
Brass Plated, Sq. Lift, Guard.₩ doz $5.50
Cop. Plated, Sq. Lift, Guard..₩ doz $5.50

Bull's Eye Police—

2¾-inch regular.....₩ doz $3.50
3-inch regular.....₩ doz $3.90
2¾-inch flash light.....₩ doz $4.00
3-inch flash light.....₩ doz $4.50

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....35%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....35%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....35%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes...Nos. 18 19 20
100 ft. $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50..30%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—

Terry's—per gro.:

Nos.	1	2	3	4
	$8.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... / Deitz, Nos. 36 to 39 / Deitz, Nos. 51 to 63 / Deitz, Nos. 87 to 96 / Champion Night Latches / Barnes Mfg. Co. / Eagle and Corbin Trunk / Champion Cab. and Combin. / Yale / Romer's — List March, '84, rev. & Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓%
Yale.....net prices
Romer's.....20%

Door, Locks, Latches, &c.—

R. & E. Mfg. Co., list Mar. 20, 1880 / Mallory, Wheeler & Co., list July, '88 / Sargent & Co., List Aug. 1, '88 / Branford Lock Works — 65&10@70% Much lower net prices often made

Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Plato.....33⅓&2%
Barnes Mfg. Co.....40&40&10%
Yale.....net prices
Delta Flat Key.....35%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof. ₱ doz. $8.00, 50%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list.....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 506.....15%
A. E. Delta.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₱ doz $9, 50&10&10%
Barnes Mfg. Co.....40&40&10%
Nock's.....30%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian, Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Haymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50&5%
No. 61 line.....60&5%
No. 21 line.....75&10%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₱ gr.....33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10&66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated. ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60&60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives Patent.....60&10&5&60&10&10%
Fish (Lieseke's pat.), No. 100, ₱ gr., $8; No. 106, ₱ gr., $10.....50%
Davis, Bronze, Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....₱ doz, $1.75; ₱ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Rice's Pat...	5.50	6.75	40&10&10%
Jennings'.	5.50	6.75	45&10%
Other Machines..	2.35	2.75	
Phillips' Patent with Augur.....	7.00	7.50	
Miller's Falls.....	7.50		25%

Fluting—

Knox, 4¼ inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Rolls, $2.15.....35%
Eagle, 5¼-inch Rolls, $2.85.....35%
Crown, 4¼ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal. ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter, No. 110, ₱ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₱ doz $8.00.....40%
Combined Fluter and Sad Iron. ₱ doz $15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Differential Pulley Block.....40%
Energy's Mfg. Co.'s.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₱ doz, No. 1, $51; No. 2, $45; No. 3, $42.
Western Star ₱ doz, No. 2, $45; No. 2 $48.
Weisell.....₱ doz $54.00
Fair and Square.....₱ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures—

Standard Fiberware, No. 1, peck ₱ dozen, $3.50; ½-peck, $3.00.

Meat Cutters—

See *Cutters Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List Jan. 1, 1888. 60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16 in., $5.50; 18-in., $6
Low-Grade Machines: 10-in. $3; 12-in., $3.25; 14-in., $3 50 each

Muzzles—

Safety.....₱ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92. 80&10&10&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
American	8¾	8¾	8¾	8¾	8¾	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&10&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	30&10%
Essex	28¢	26¢	25¢	24¢	23¢	40&10&5@50&5%
Lyra	19¢	17¢	16¢	15¢	14¢	40&10%
Snowden	19¢	17¢	16¢	15¢	14¢	40&10%
Vulcan	23¢	21¢	20¢	19¢	18¢..	..25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
A. C.	25¢	23¢	22¢	21¢	21¢	25&10@33⅓&5%
C. B. K.	.25¢	23¢	22¢	21¢	21¢	33⅓@33⅓&10%
Maud S.	.25¢	23¢	22¢	21¢	21¢	40&10&5%
Champlain	.28¢	26¢	25¢	24¢	23¢	40&5&5&2%
Saranac	.23¢	21¢	20¢	19¢	18¢	...40&5%
Champion	.25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell.	..19¢	18¢	17¢	16¢	16¢	..10&5%
Anchor	.23¢	21¢	20¢	19¢	18¢	.....35%
Western	.23¢	21¢	20¢	19¢	18¢	.....50%
Empire Bronzed						.....13@14 ₱ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₱ ℔, net; in packages less than 100 ℔, add ½¢ ₱ ℔, net.

Oakum—

Best or Government. . ....₱ ℔ 6¾@7¼¢
U. S. Navy.....₱ ℔ 5¾@6¢
Navy.....₱ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%

Openers, Can—

Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $2.75@$3.00
Duplex.....₱ doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4, French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45@50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66⅔@70%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
World's Best ₱ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....55&5%
Domestic, ₱ doz $2.00.....45%
Champion, ₱ doz $2.00.....50%

Packing, Steam—

Rubber—

Standard.....70@70&10%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₱ ℔ 80¢....25@25&5%

Miscellaneous—

American Packing.....10¢@11¢ ₱ ℔
Russia Packing.....14¢ ₱ ℔
Italian Packing.....15¢@14¢ ₱ ℔
Cotton Packing.....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 per doz..... 5%

Galvanized—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75	
Heiwig's.	2.50	2.75	3.00	
Sidney Shepard & Co.	2.35	2.85	3.05	
Iron Clad.	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware—25%

	Plain.	Decr'd
Star Pails, 12 qt.	₱ doz $4.20	
Milk, 14 qt.	₱ doz $5.40	
Stable, 14 qu.	₱ doz $6.00	
Fire Pails, deep.	₱ doz $4.80	
Fire Pails, round bottom	₱ doz $5.40	

Standard Fiber Ware—

	Plain.	Decr'd
Water Pails, 12 qt., ₱ doz.	$3.60	$4.00
Dairy Pails, 14 qt., ₱ doz.	4.00	4.50
Fire Pails, No. 1, 12 qt., ₱ doz	4.00	
Fire Pails, No. 2, 14 qt., ₱ doz	4.50	
Sugar Pails.	5.50	6.00
Horse Pails.	4.50	
Buggy Pails.	3.50	
Slop Jars (bal. trap).	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes.....₱ ℔ 5½¢
Large sizes.....₱ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—

Standard List: No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....60%

Dust—

Steel Edge, No. 1.....₱ doz $1.75

Roasting and Baking—

Columbia, S. S. & Co.: Nos. 10, 12; 20, $2.25; 30, $2.50 each.....50%

Paper and Cloth—Sand and Emery—

List April 19, 1886.....50&10@50&10&5%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....₱ doz $4.75
Baldwin.....₱ doz 5.25
Bonanza.....each 5.00
Daisy.....₱ doz 4.00
Dandy.....each 7.50
Eclipse.....₱ doz 4.25
Eureka, 1888.....each 16.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State....₱ doz 27.00@30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6.00
Turn Table.....₱ doz 4.50
Victor.....₱ doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.00
72.....₱ doz 4.25
78.....₱ doz 7.00

Potato—

White Mountain.....₱ doz $4.50
Antrim Combination.....₱ doz $5.50
Hoosier.....₱ doz $13.50
Saratoga.....₱ doz $5.50

Pencils—

Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead.....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters'.....10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&10%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, #17 and #18.....60&10%
Peck, Stow & W. Co.....50&10@50&10&5%

Curtain—

Silvered Glass.....net
White Enamel.....net

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List October 12, 1892.

1¼ and under, Plain.....60&10%
1¼ and under, Galv.....52½&10%
1½ and over, Plain.....70&10%
1½ and over, Galv.....60&10%
Boiler Tubes, list Oct. 24, 1892...65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing..50%

Planes and Plane Irons—

Wood Planes—

Molding.....40@40&10%
Bench, First quality.....45@45&10%
Bench, Second quality.....50@50&10%
Bailey's (Stanley R. & L. Co.)....50&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to $
Buck Bros.....30%
Auburn Thistle, Ohio, Sandusky } .....30&10%
L. & I. J. White.....35%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....₱ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₱ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50%
P., S. & W. Tinners' Cutting Nippers add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00.....30&5%
Cronk's 5 in., $15.00; 10 in., $21.00.....50@50&5%
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—

Regular List.....75&10@75&10&5%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....40&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ₱ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop's I. X. L.....₱ doz $6.00
Bishop's O. K.....₱ doz $5.25
Bishop's Pioneer.....₱ doz $3.75
Bishop's American.....₱ doz $2.75
Eagle, Double Stale.....₱ doz $5.75
Eagle, Single Stale.....₱ doz $3.75
Buckeye, Single Stale.....₱ doz $2.75
Bolding.....₱ doz $6.00
Metallic Horse Poke.....₱ doz., $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 3 Hands, Polished, ₱ doz, $48.00; Nickeled, $57.00; 3 hands, Polished, ₱ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—

Joseph Dixon's.....₱ gro, $6.00, 10%
Gem.....₱ gro, $4.50, 10%
Gold Medal.....₱ gro, $6.00, 25%
Lustro.....₱ gro, $4.75
Ruby.....₱ gro, $3.75
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ℔ 8¢
Boynton's Noon Day.....₱ gro $13.00
Parlor Pride Stove Enamel, ₱ gro
Yates' Liquid, 2 gal...$0.80, 3 gal...$0.70, 5 gal...$0.60, 10 gal...$0.50
Yates Standard Paste Polish, 10 ℔ cans, ₱ ℔ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish, ₱ gro $9.00
Bonnell's Paste Stove Polish, ₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₱ ℔ 12¢
Black Flag.....₱ gro $7.20
Black Flag, 5 and 10 ℔ pails.....₱ ℔ 12¢
Black Flag, liquid, in bottles, ₱ gro $8.00
Diamond Rock Nickel Cleaner.....₱ gro $10.80
Raven Paste:
5-lb. pails, (per case of 6 or 12), ₱ ℔ 12¢
Less than case.....₱ ℔ 15¢
Liquid, 6 oz. bottles.....₱ gross, $8.00
Liquid, 8 oz. bottles.....₱ gross, $9.00
Water Polish.....₱ gross, $5.85

Poppers, Corn—

Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....$0.90
Duck, 1 ℔ each.....60
Rifle, 1 ℔ each.....30
Rifle, ½ ℔ each.....18
Rifle, ¼ ℔ each.....12

In Kegs—

Rifle, 25 ℔ kegs.....$4.00
Rifle, 12½ ℔ kegs.....2.00
Rifle, 6¼ ℔ kegs.....1.00
Duck, 25 ℔ kegs.....3.00
Duck, 12½ ℔ kegs.....1.75
Duck 6¼ ℔ kegs.....1.

Presses—
Fruit and Jelly—
Enterprise Mfg. Co. 25%
Henis ..... ₩ doz $3.50
Shepard's Queen City 40%
Silver & Co. ..... ₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

Pullers Nail—
Scranton ..... ₩ doz., $18.00, 33⅓%
Curtis Hammer ..... ₩ doz., $9.00
Giant, No. 1 ..... ₩ doz., $18.00, 10%
Giant, No. 2 ..... ₩ doz., $15.00, 10%
Pelican ..... ₩ doz., $9.00, 25%
Eclipse ..... Each, $2.00, net
Economy ..... ₩ doz., $6.00

Pulleys—
Hot House, Awning, &c. ..... 66⅔@70%
Japanned Screw ..... 60&10&10%
Brass Screw 70%
Japanned Side ..... 60&10&10%
Japanned Clothes Line ..... 60&10%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70 ..... 50%
Hay Fork, "F" Common and Patent Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating 60%
Shade Rack 45%
Tackle Blocks—See Blocks.
Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00 ..... 40%
Shepard's Niagara, No. 25 ..... 80%
Sash (Auger Mortise).
Common Sense 60%
Empire 60%
Ideal, Nos. 2, 4, 10 & 15 Acme Star } 60% less 1¢ ₩ doz net.
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper G'ds. .75@75&10%

Punches—
Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive. 50&5%
Bemis & Call Co.'s Springfield Socket ..... 50&5%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring and Check. 40%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44 ..... 55%
Tinners' Hollow Punches, P., S. & W. Co. ..... 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Sawset and Punch—See Sawsets

Rail—
Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ¾
Per 100 feet $2.00 2.50 3.10, 10%
S. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet..... $3.15 2.70 3.25 Net
Terry's Steel Rail ..... ₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot ..... 50&2%
Carrier, double braced, Steel Rail, ₩ foot ..... 3½@4¢
Moore's Wrought Iron 25%
Moody Steel Rail ₩ ft., 5¢ 45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds, ... 70@70&5&2%
Malleable ..... 70@70&5%
Gibbs' Lawn Rake ..... ₩ doz., $4.90
Gibbs' Canton Lawn Rake..₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake. ₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1 ..... ₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake ..... ₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 20%
Westenholm and Butcher, $10 to $.... 10%
Jordan's AAAI, new list ..... Net
Jordan's Old Faithful, new list ..... Net
Galvanic ..... ₩ doz., $15.00
Electric Cutlery Co. ..... Net
Campbell Cutlery Co. 50%

Razor Strops—See *Strops, Razor.*

Rings and Ringers—
Bull Rings—
Union Nut Co. 55%
Sargent's ..... 75&10%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s ..... 70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. ..... 50@50&10%
Hog—
Top of the Hill Ringers ..... ₩ doz $2.00
Top of the Hill Rings ..... ₩ doz $1.25
Hill's Improved Ringers ..... ₩ doz $1.25
Hill's Old Style Ringers ..... ₩ doz $1.12½
Hill's Tongs ..... ₩ doz $3.00
Hill's Rings ..... ₩ doz bxs $1.00
Perfect Rings ..... ₩ doz bxs $1.50
Perfect Ringers ..... ₩ doz $2.15@$2.25
Blair's Hog Ringers ..... ₩ doz $2.00
Blair's Hog Rings ..... ₩ doz 90@$1.00
Champion Ringers ..... ₩ doz $2.00
Champion Rings, Double ..... ₩ doz $2.25
Brown's Ringers ..... ₩ doz $2.00
Brown's Rings ..... ₩ doz $1.15@$1.25
Electric Hog Rings ..... ₩ doz boxes $1.50
Electric Hog Ringers ..... ₩ doz $2.00
Major Rings ..... ₩ doz $1.25
Major Ringers ..... ₩ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87 ..... 60&10@—%
Copper ..... 60@60&10%
Coppered Iron, Bettina Brand 40%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass ..... 25@30%
Stair, Black Walnut ..... ₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ..... 60&10&10%
Acme Moore's Anti-Friction. 55%
Union Barn Door Roller 70%
Thompson Mfg. Co.'s Lawn Rollers 30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ½¢@¾¢ on large lots; terms, 1½% for cash.
Manila, 7-16 in. diam. and larger ₩ ℔ 9¾¢
Manila ..... ⅜ in. ₩ ℔ 10¼¢
Manila ..... ¾ and 5-16 in. ₩ ℔ 10¾¢
Manila, Tarred Rope ..... ₩ ℔ 9¼¢
Manila, Hay Rope ..... ₩ ℔ 9¼¢
Sisal ..... 7-16 inch and larger ₩ ℔ 8 ¢
Sisal ..... ⅜ in. ₩ ℔ 8¼¢
Sisal ..... ¾ and 5-16 in. ₩ ℔ 9 ¢
Sisal, Hay Rope ..... ₩ ℔ 8 ¢
Sisal, Tarred Rope ..... ₩ ℔ 7½¢
Sisal, Medium Lath Yarn ..... ₩ ℔ 7½¢
New Zealand..7-16 in. & larger ₩ ℔ 7½¢
New Zealand ..... ⅜ inch, ₩ ℔ 7¾¢
New Zealand..¾ and 5-16 inch, ₩ ℔ 8¼¢
New Zealand, Hay Rope ..... ₩ ℔ 7½¢
New Zealand, Tarred Rope ..... ₩ ℔ 6¾¢
Cotton Rope ..... ₩ ℔ 13½@16¢
Jute Rope ..... ₩ ℔ 6¾@7¢

Wire—
List February, 1892. All kinds 45%

Rules—
Boxwood ..... 80&10&10%
Ivory ..... 50&10%
Starrett's Steel Rules and Straight Edges ..... 25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—The following prices are generally cut by jobbers.
Disston's Circular ..... 45@45&5%
Disston's Cross Cut ..... 40@40&5%
Disston's Hand 25%
Woodrough & McParlin.
Hand, Panel and Rip ..... 30@30&5%
Narrow Champion Cross Cuts with Handles, ₩ foot ..... 18@20¢
Champion Thin Back Cross Cuts, ₩ foot ..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₩ foot ..... 29@31¢
One Man Champion Cross Cuts, ₩ foot ..... 37@40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip ..... 35@35&5%
Narrow Champion Cross Cuts with Handles, ₩ foot ..... 18@20¢
Champion Thin Back Cross Cuts, ₩ foot ..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₩ foot ..... 29@31¢
One Man Champion Cross Cuts, ₩ ft. ..... 37@39¢
Atkins' Circular 50%
Atkins' Cross Cuts, new list 40%
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw 40%
Peace Circular and Mill ..... 45@45&5%
Peace Hand Panel and Rip ..... 25@25&5%
Peace Cross Cuts ..... 45@45&5%
Richardson's Circular and Mill. 45@45&5%
Richardson's X Cuts ..... 45@45&5%
Richardson's Hand, &c. ..... 25@25&5%
C E. Jennings & Co.'s brand 25%

Hack Saws—
Griffin's, complete ..... 40&10@50
Griffin's Hack Saw Blades ..... 40&10@50
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—
Lester, complete, $10.00 ..... 25%
Rogers, complete, $4.00 ..... 25%
Barnes' Builders' and Cab Makers' $15. 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161.... ₩ doz $6.50@$7.00
Union Platform, Plain ..... $2.10@2.20
Union Platform, Striped ..... $2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10
Riehle Bros.' Platform 40%

Scale Beams—See *Beams, Scale.*

Scissors, Fluting 45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00 ..... 30&10%
Box, 1 Handle ..... ₩ doz $2.25@$2.50
Box, 2 Handle ..... ₩ doz $3.00@$3.25
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10&60%
Ship, Common ..... ₩ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—See *Drivers, Screw.*

Screws—
Bench and Hand—
Bench, Iron ..... 55&10@55&10&10%
Bench, Wood, Beech ..... ₩ doz $2.25
Bench, Wood, Hickory ..... 20&10%
Hand, Wood ..... 25&10@25&10&5%
Hand, Grand Rapids, list 35%
Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890 ..... 80@80&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 ..... 80@80&5%
Hand Rail, Sargent's ..... 70&10%
Hand Rail, H. & B. Mfg. Co. ..... 70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws—
Jack Screws, Millers Falls list. 50@50&10%
Jack Screws, P., S. & W. 35%
Jack Screws, Sargent 70%
Jack Screws, Stearns' ..... 40@40&10%
Cork—
Humason & Beckley Mfg. Co. .40&10@50%
Williamson's ..... 33⅓@33⅓&5%
Detroit Cork Screw Co. 33⅓%
Machine—
Flat Head Iron 65%
Round Head Iron 60%
Wood—
List January 1, 1891.
Flat Head Iron 70%
Round Head Iron 65%
Flat Head Brass 70%
Round Head Brass 65%
Flat Head Bronze 70%
Round Head, Bronze 65%
} Extra 10 or 10& 10% often given.
Rogers' Drive Screws 82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain ..... 40&5@40&10%
Grass ..... 40&10&50%

Scythe Snaths—See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00 ..... 60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 ..... 40%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18 ..... 25%
Henry's Combination Haft... ₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50...70&10&5%
Nail—
Square ..... ₩ gr. $4.00@$4.25
Round ..... ₩ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point... ₩ gr. $12, 20%
Rivet—
Regular list 70%
Saw—
Stillman's Genuine.... ₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $5.25 ..... 55%
Common Lever ..... ₩ doz $2.00, 45@50%
Morrill's No. 1, $14.00 ..... 40&20%
No. 11, $15.50 ..... 40&20%
Nos. 3 and 4, Cross Cut, $22.50.. 40&20%
No. 5, Mill, $30.00 ..... 40&20%
No. 10, $15.00 ..... 40&20%
Leach's..No. 0, $8.00; No. 1, $15.. 15@20%
Nash's ..... 20&10@20&10&10
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat., 30&5%
Bemis & Call Co.'s Lever and Spring Hammer ..... 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine ..... $13.00, 50&10&10%
Aiken's Imitation ..... $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold ..... 40&10@50%
Atkin's Lever ..... ₩ doz No. 1, $6.00
Atkin's Criterion ..... ₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10%
Avery's Saw Set and Punch 50%
Kohler's Royal ..... ₩ doz $7.00
Kohler's Giant Royal ..... ₩ doz $12.00
Crescent ..... ₩ doz $3.00
Lloyd's Acme ..... ₩ doz $15, 40&10%
Taintor Positive ..... ₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) ..... 40&10%
Stearns' ..... 30&10%
Cincinnati ..... 25&10%
Goodell's ₩ doz. $9.00 ..... 25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears 33⅓%
Cast Steel Trimmers: First quality ..... 80@80&10% Second quality ..... 80&10@80&10&10%
Acme Cast Shears ..... 10&10%
Diamond Cast Shears 10%
Clipper ..... 10&10%
Victor Cast Shears ..... 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Hatch Cutlery Co., Solid Steel Forged. 60%
Davenport Cutlery Co. ..... 60@60&10%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co ..... Net
Campbell Cutlery Co., Jap'd 75%
Nickel Plated 62½

Pruning Shears and Hooks
Disston's Combined Pruning Hook and Saw ..... ₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $13.00 ..... 30&10%
E. S. Lee & Co.'s Pruning Tools. 50&10@70%
Pruning Shears, Henry's Pat., ₩ doz. $3.75@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 20%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co. 50%
Levin Pruner No. 1, $12.00 ₩ doz 40&5%
Levin Pruner No. 2, $21.00 ₩ doz ..40&5%

Tinners', &c.—
Shears and Snips (P. S. & W.) ..... 20@25&5
Snips, J. Mallinson & Co. 33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885 ..... 55&20%
Corbin's list ..... 60&10&5%
Patent Roller ..... 60&10&5%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 ..... 60&5%
Moore's Anti-Friction 60%
Sliding Shutter—
R. & E., list Dec. 18, 1885 ..... 60&10&5%
Sargent's list 70%
Reading list ..... 60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&5%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list) ..... 20&10&5%
Prize ..... 40&5%
Star, Club, Rival and Climax Brands... 33⅓&10&5%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&5%
Trap brand, 12 and 10 gauge..33⅓&10&5%
Seibold's Comb. Shot Shells ..... 15&5%
Brass Shot Shells, 1st quality ..... 60&5%
Brass Shot Shells, Club, Rival, Climax. 65&5%
Shells, Loaded—
Standard List, July 19, 1890 ..... 40&10&10@40&10&10&5%

Ship Tools—
L. & I. J. White ..... 20&5%

Shoes, Horse, Mule, &c.—
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State and Bryden's Boss, at factory $4.00
Bryden's Frog Pressure, at factory.. $5.00
Mule—
Add $1 ₩ keg to above prices.
Ox Wrought—
Ton lots ..... ₩ ℔ 9¢
1000 ℔ lots ..... ₩ ℔ 9½¢
500 ℔ lots ..... ₩ ℔ 10¢

Shot—
Small lots.
Drop, up to B, 25-℔ bag $1.45
Drop, up to B, 5-℔ bag ..... .35
Drop, B and larger, 25-℔ bag 1.70
Drop, B and larger, 5-℔ bag ..... .40
Buck and Chilled, 25-℔ bag 1.70
Buck and Chilled, 5-℔ bag .40
Dust Shot, 25-℔ bag 2.00
Dust Shot, 5-℔ bag ..... .45
In ton lots 40¢ ₩ bag discount of 5¢ is made. (25 ℔)

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885 ..... 30%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron ..... 50&10%
Griffith's C. S. ..... 60@60&5%
Griffith's Solid C. S. R. R. Goods 20%
St. Louis Shovel Co. ..... 20@20&7½%
Hussey, Binns & Co. ..... 15@25%
Hubbard & Co. ..... 20@20&7½%
Lehigh Mfg. Co. ..... 50&10%
H. M. Myers Co. 30%
Payne Pettebone & Son ..... 33⅓&5%
Remington's (Lowman's Pat.) 40&10@50%
Rowland's Black Iron..50&10@50&10&5%
Rowland's Steel ..... 60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head ..... 60&10@60&10&5%
Brass Head ..... 60&10&10%

Sieves—
Mann's Tin Rim ..... 50&25%
Buffalo Metallic, S. S. & Co. ..... 50&25%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $18.00@$20.00
Electric ..... ₩ gr $17.00@$20.00
A. & W. Sifters ..... ₩ gr $18.00@$20.00
Hunter's ..... ₩ gr $18.00@$20.00

Sieves, Wooden Rim—

	Iron	Plated.
Mesh 18, Nested, ₩ doz.	$0.80	$1.00
Mesh 20, Nested, ₩ doz.	.95	1.10
Mesh 24, Nested, ₩ doz.	1.15	1.35

Sinks, Wrought Steel—
Columbus, Painted or Unpainted ..... 30@30&10 %
Columbus, Galvanized and Enameled. 50@50&10 %
New Era, Painted ..... 40&10@50&5 %
New Era, Galvanized and Enameled. 60&10&10@70&5 %

Skeins, Thimble—
Western list ..... 75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co. 60%
Seneca Falls Pattern 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 30%

Slates—
School, by case ..... 50&10@50&10&10%

Sleds, Hand—
Tubular Steel ..... ₩ doz $24.00 40&5% (Lots of 6 doz 50%)

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)....65%
Fitch's (Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Bargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
Covert's Saddlery Works' Triumph 33⅓&%
John Protz Snaps....75@75&5%

Snaths, Scythe—

List....50@50&5%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₱ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo, S. S. & Co....33⅓&2%

Silver Plated—

months or 5% cash 30 days:
Meriden Brit. Co., Rogers....40&15%
C. Rogers & Bros....40&15%
Rogers & Bros....40&15%
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
I. Boardman & Son....50&12½%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver....50&10&5%
No. 30 Silver Metal....50&10&5%
No. 24 German Silver....50&10&5%
No. 50 Nickel Silver....50&5%
No. 49 Nickel Silver....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal....50&10&5%
18% Rogers' German Silver....60&5%
20% Rogers' Nickel Silver....50&5%
German Silver....50@50&5%
German Silver, Hall & Elton..50&5% cash
Nickel Silver....50&5@50&10&5% cash
Brittannia....60@60&5%
Boardman's Nickel Silver, list July 1, 1891....60&7½&5%
Boardman's Brittannia Spoons, case lots....60&5% cash

Springs—

Door—

Torrey's Rod, 30 in....₱ doz $1.20&1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40....55@55&10%
Gem (Coil), list April 19, 1886....20%
Star (Coil), list April 19, 1886....20&10%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $16.00....50@50&10%
Rubber, complete, ₱ doz $4.50....55&10%
Hercules....50@50&10%
Phœnix....33⅓%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll....60&10@60&10&10&10 or net prices
Cliff's Bolster Springs....25%

Squares—

Steel and Iron, Nickel-Plated....85@85&5%
Try Square and T Bevels....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares....25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers—

Fodder—

Blair's....₱ doz $2.00
Blair's "Climax"....₱ doz $1.25

Lemon—

orcelain Lined, No. 1....₱ doz $6.00....25&30%
Wood, No. 2....₱ doz $3.00, 35%
Wood, Common....₱ doz $1.70@$1.75
Dunlap's Improved....₱ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12 $18 ₱ doz....25&10%
Jennings' Star....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's..Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant....50@50&5%
King....40&5%
Hotchkiss Straight Flash....₱ doz $12.00
Silver & Co., Glass....₱ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ¼ in. and larger, ₱ 2.70@71½¢
Barbed Blind, ¾ in....₱ ᵬ 80@81½¢
Fence Staples, Galvanized, Fence Staples Plain } Same price as B'rb Wire
SeeTrd. Rep
Grand Crossing Tack Co.'s list ...75&10%

Steelyards....40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods....35%
Butterfield's Goods....35%
Lightning Screw Plate....25@30%
Reece's New Screw Plates....25@30%
Reversible Ratchet....30%
Gardner....25%
Green River....25@30%

Stops, Bench—

Morrill's, ₱ doz., Nos. 1, $9.50; 2, $12.00....40&20%
Hotchkiss's....₱ doz $5, 10@10&10%
Weston's, No. 1, $10 No. 2, $9, 25&10&5%
McGill's, ₱ doz $3....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.50....30%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₱ ᵬ....8¢
Sand Stone....5¢ } 40 @ 40&10%
Turkey Oil Stone, 4 to 8 in....80¢
Turkey Slips....$2.00
Washita Stone, Extra....50¢
Washita Stone, No. 1....40¢
Washita Stone, No. 2....30¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5½ to 8 in., $3.50 } 33⅓@33⅓&10%
Lake Superior....₱ ᵬ 13¢
Lake Superior Slips....₱ ᵬ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished....₱ doz $2.2
Cast Iron, Steel Points....₱ doz 75@80¢
Socket....₱ doz $1.75
Bullard's....25@25&10%

Strops, Razor—

Genuine Emerson....60@60&5%
Imitation " ..₱ doz $2.00, 20&10&5%
Torrey's....20%
Badger's Belt and Com....₱ doz $2.00
Lamont Combination....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co....Net
Campbell Cutlery Co....Net

Stuffer, Sausage—

Miles' Challenge, ₱ doz $20....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00....50&5@50&10%
Draw Cut No. 4, each $30.00....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5....₱ doz $17.00
Bissell No. 8....₱ doz $20.00
Bissell, Grand....₱ doz $36.00
Standard....₱ doz $24.00
Domestic....₱ doz $21.00
Domestic, No. 2....₱ doz $22.00
Grand Rapids....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₱ doz $15.00
Improved Parlor Queen, Nickeled....₱ doz $27.00
Japanned....₱ doz $24.00
Excelsior....₱ doz $22.00
Garland....₱ doz $18.00
Parlor Queen....₱ doz $24.00
Housewife's Delight....₱ doz $15.00
Ladies' Friend....₱ doz $15.00
Ladies' Friend No. 2....₱ doz $16.00
Advance....₱ doz $18.00
Our Leader....₱ doz $19.00
Triumph....₱ doz $20.00
Goshen....₱ doz $21.00
Supreme....₱ doz $22.00
Easy....₱ doz $22.00
Gilt Edge....₱ doz $24.00
Acme....₱ doz $26.00
Imperial....₱ doz $26.00
Grand Republic....₱ doz $30.00
Banner....₱ doz $22.00
The Star....₱ doz $21.00
Reliable....₱ doz $22.00
The Rapid....₱ doz $22.00
Our Own....₱ doz $27.00
Model....₱ doz $27.00

Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months....₱ doz $1.00
10 dozen in 6 months....₱ doz $2.00
25 dozen in 6 months....₱ doz $3.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co....30%

Swings—

Davies Lawn....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued....66⅔%
American, Tin'd and Cop'd....70%
Steel, Bright and Blued....66⅔%
Steel, Tinned and Coppered....70%
Swedes Iron, Blued....72½%
Swedes Iron, Tinned....75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued....66⅔%
S. S., Tinned....70%
Lanc., Blued....55%
Lanc., Tinned....60%
Gimp and Lace Tacks—
S. S., Blued....62½%
S. S., Tinned....66⅔%
Lanc., Blued....55%
Lanc., Tinned....60%
Basket and Trimmers' Tacks—
Lanc....52½%
S. S....60%
Hungarian Nails....60%
Common and Patent Brads....55%
Leathered Tacks....10%
Brush Tacks, S. S....60%
Looking Glass Tacks, S. S....35%
Picture-Frame Points, S. S....35%
Finishing Nails....60%
Trunk and Clout Nails—
Black....62½%
Tinned or Coppered....66⅔%
Basket Nails....60%
Chair Nails....52½%
Cigar Box Nails....40%
Tin Capped Nails....50%

Extra discount 25&2%

Miscellaneous—

Double Point....90@90&10%
Wire Carpet Nails....50&10%
Claw Handle Carpet....₱ gross $4.00
Bonnie Blue....₱ box 1 50
Bill Nye Brad Box....4 00
Parisian Gilt Nails, cartoon....50
Home Tacks, No. 50 ₱ case (12 cartons), $36.00; No. 100, ₱ case (12 cartons), $72.00 } 50&2%
Home Nails, No. 200, ₱ case (12 cartons), $30.00; No. 400, ₱ case (12 cartons), $60.00
Upholsterers' Nails....50&10%

Wire Brads and Nails—

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each....50&10%

Tapes, Measuring—

American....40@40&5%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—

Tin Case....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list....50&10&5%

Tinners' Shears, &c —

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's....20%
Barton's....20@20&5%
L. & I. J. White....20&5%
Albertson Mfg. Co....25%
Beatty's....30%
Sandusky Tool Co....30@30&5%
Shaves Cincinnati Tool Co....20%

Lumber—

Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mail. Iron Socket Peavies..₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mail. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mail. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks....₱ doz $18.00

Saw—

Atkins', new list....40%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse....40@40&5%
Oneida Pattern....70&10%
Game, Blake's Patent....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire....₱ doz $1.50 10%
Mouse, Cage, Wire....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza....₱ doz 0.90@$1.00
Rat, Decoy....₱ gr $10.00, 10%
Ideal....₱ gr $10.00
Cyclone....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer....₱ gro $15.00
Dandy....₱ doz., $1.75

Triers—

Butter and Cheese....25%

Trimmers, Spoke—

Bonney's....₱ doz $10.00, 50%
Stearns'....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz.
55&10%
Douglas'....₱ doz $9.00, 20%
Cincinnati....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering....15%
Disston's Br'k and Plastering..25@25&10%
Peace's Plastering....25@25&5%
Clement & Maynard's....20@20&5%
Rose's Brick....15@20%
Brade's Brick....25%
Worrall's Brick and Plastering....20%
Garden....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list....40%
Thompson Mfg. Co....40¢
Barnes' Barrel Trucks....40%

Tubes Boiler—

See Pipe

Twine—

Flax Twine—

	BC.	R.
No. 9, ¼ and ⅛ ᵬ Balls	29¢	31¢
No. 12, ¼ and ⅛ ᵬ Balls	22¢	30¢
No. 18, ¼ and ⅛ ᵬ Balls	20¢	29¢
No. 24, ¼ and ⅛ ᵬ Balls	20¢	29¢
No. 36, ¼ and ⅛ ᵬ Balls	18¢	28¢

No. 264 Mattrass, ¼ and ⅛ ᵬ Balls, 52@54¢
Chalk Line, Cotton, ⅛ ᵬ Balls....28¢
Mason Line, Linen, ⅛ ᵬ Balls....55¢
2-Ply Hemp, ¼ and ⅛ ᵬ Balls (Spring Twine)....15¢
2-Ply Hemp, 1 ᵬ Balls....16¢@16½¢
3-Ply Hemp, 1⅛ ᵬ Balls....15¢@15½¢
Cotton Wrapping, 5 Balls to ᵬ..15¢@16¢
2, 3, 4 and 5 Ply Jute, ⅛ ᵬ Balls....10¢
Wool....6½¢@6¾¢
Paper....12¢@14¢
Cotton Mops, 6, 9, 12 and 15 ₱ to doz..18¢

Vises—

Solid Box....50&10@60%

Parallel—

Fisher & Norris Double Screw....15&10%
Stephens'....25@30%
Parker's....20@25%
Wilson's....50%
Howard's....40%
Bonney's....50%
Millers' Falls....40@40&10%
Trenton....40@50@40&10%
Merrill's....15@20%
Hollands'....35@40%
Sargent's....70&10%
Backus and Union....40%
Double Screw Leg....15&10%
Prentiss....20@25%
Simpson's Adjustable....40%
Moore's....20%
Massey Quick Action....20@30%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10%
Stearn's....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises....33⅓@35%
Hopkins'....₱ doz $17.50, 10%
Reading....40&10%
Wentworth....20&10%
Economy, ₱ doz., Nos. 110, $10.00; 130, $15.00....50&10&10&5%

Miscellaneous—

Phœnix Vises....33⅓%
Phœnix Hand Vises....₱ doz $3 60, 33⅓%
Cowell Hand Vises....20%
Bauer's Pipe Vises....10%
Cincinnati....25&10%
Enterprise Pipe Vises....each $3.0 , 40%
Massey Combination Pipe Vise....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up.. 68¢
U.M.C.&W.R.A.—B. E., 9&10.. 82¢
U.M.C.&W.R.A.—B. E., 8....96¢
U.M.C.&W.R.A.—B. E., 7....$1.10
U.M.C.&W.R.A.—P. E., 11 up. 1.15
U.M.C.&W.R.A.—P. E., 9&10.. 1.50
U.M.C.&W.R.A.—P. E., 8.... 1.70
U.M.C.&W.R.A—P. E., 7.... 1.80 } Dis. 30&5%
Eley's B. E., 11 and larger....$1.70@$1.75
Eley's P. E., 12 to 20....3.00@ 3.25

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground....60&10@60&10&10%
Unground....65&10@7. &5%
White Enameled Ware—
Maslin Kettles....70&10@75%
Boilers and Saucepans....60@60&5%
Tinned Boilers and S'pans....60@60&5%
Rustless Hollow Ware....50@50&5%
Gray Enameled Ware—
Stove....50%
Maslin Kettles....50&60&10%
Boilers and Saucepans....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889....33⅓&10%
Ironclad Enameled Ware....dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch.....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Doz. Plain.	Decorated.
Wash-Basins, 10½ in....	$1.80	2 00
Wash-Basins, 12 in....	2.00	2.50
Keelers, 11¼ in....		3.50
Cuspidors....		3.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure....	3.50	
Half-peck Measure....	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₱ doz....$6.00
Basins, Ringed, ₱ doz., No. 2....2.80
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest....$5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest....$2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest....$1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₱ set....$1.20 } 25%
See also Pails.

Silver Plated, Hollow—

4 mo. or 5% cash in 30 days.
Reed & Barton....
Meriden Britannia Co....
Simpson, Hall, Miller & Co.... } 40&5%
Rogers & Brother....
Hartford Silver Plate Co.... } 40&5&2½%
William Rogers Mfg. Co....

Washers—

Size hole....5-16 ⅜ ½ ⅝ ¾ to 1⅛
Washers....5½ 4½ 3½ 2½
In lots less than 200 ᵬ, ₱ ᵬ, add ½¢, 5-ᵬ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron....₱ ᵬ 3½¢
Steel....₱ ᵬ 3½¢

Weights, Sash—

Solid Eyes....₱ ton $18.00@$19.00

Well Buckets Galvanized—See *Buckets, Well, Galvanized.*

Wheels Well—

8 in., $2.00 10 in. $2.50 12 in $2.75

Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving...	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whalebone.	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	..	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	..	....	....

Per dozen.

A large variety of cheaper grades.....$0.50@$2.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,
Br. & Ann., Nos. 0 to 18. 75&10@75&10&5%
Cop'd, Nos. 0 to 18. 75&5%
Galv., Nos. 0 to 18 ..... 70&5@70&10%
Tin'd. Tin'd list, Nos. 0 to 18.....70&70&10%
Extra 10% often given.

Stone,
Br. and Ann'd, Nos. 16 to 18.....80%
Bright and Ann'd, Nos. 19 to 26.....80&5%
Br. and Ann'd, Nos. 27 to 36.....82½&5%
Tinned .....65&10%
Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....4¾@
Galvanized Fence .....75&10%
Brass, list Jan. 18, 1884.....40@5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass 50%
Cast Steel Wire 50%
Stubs' Steel Wire .....$3.00 to $, 30%
Steel Music Wire, 12 to 30, imported.... 60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....80&20@85%

Wire Cloth and Netting—

Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....75@75&10%

Wire, Barb—

See Trade Report.

Wire Rope—See *Rope. Wire.*

Wrenches—

American Adjustable 40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine .....50&3%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
75&10@80%

Bemis & Call's:
Pat. Combination.....40%
Merrick's Pattern.....25%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....50%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination..... 20%
Boardman's..... 30%
Always Ready..... 25&2%
Alligator..... 30%
Donohue's Engineer.....20&10%
Eagle..... 50&10%
Acme, Bright..... 50&2%
Acme, Nickeled..... 40&2%
Hercules.....70@70&2%
Walker's..... 55&2%
Diamond Steel..... 55&2%
Cincinnati Brace Wrenches.....25&10%
Tafts Vise Wrench.....55&10&2%

Wringers, Clothes—

Am. Wringer Co.'s list, Jan. 2, '93..2% cash
Colby WringerCo., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list Jan. 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892..... .....2% cash

Wrought Goods—

Staples, Hooks, &c., list March 17, 1893 85&10@85&10%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	50
Linseed, City, boiled.....	..	@	53
Linseed, Western, raw	..	@	50
Lard, City, Extra Winter...	..	@	1.00
Lard, City, Prime.....	98	@	1.00
Lard, City, Extra No. 1.....	75	@	80
Lard, City, No. 1	65	@	70
Lard, Western, prime.....	98	@	..
Cotton-seed, Crude, prime.	42	@	..
Cotton-seed, Crude, off grades	40	@	43
Cotton-seed, Summer Yellow, prime	53	@	55
Cotton-seed, Summer Yellow, off grades.....	48	@	.50
Sperm, Crude	..	@	1.00
Sperm, Natural Spring	..	@	..
Sperm, Bleached Spring.....	..	@	..
Sperm, Natural Winter.....1.00		@	1.03
Sperm, Bleached Winter... 1.05		@	1.08
Whale, Crude		@	..
Whale, Natural Winter.....	55	@	56
Whale, Bleached Winter....	..	@	58
Whale, Extra Bleached.....	59	@	60
Sea Elephant, Bleached Winter.....	..	@	..
Menhaden, Crude, Sound...	40	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed...	42	@	43
Menhaden, Bleached W'ter.	45	@	..
Menhaden, Extra Bleached.	48	@	..
Tallow, City, prime.....	70	@	75
Tallow, Western, prime....	66	@	70
Cocoanut, Ceylon.....	6¾	@	..
Cocoanut, Cochin.....	..	@	7¼
Cod, Domestic.....	38	@	40
Cod, Foreign.....	42	@	45
Red Elaine.....	40	@	45
Red Saponified..... ₩ ℔	7	@	7¼
Bank..... per gal	40	@	41
Straits.....	41	@	42
Olive, Italian, bbls.....	63	@	65
Neatsfoot, prime.....	80	@	90
Palm, prime, Lagos..... ₩ ℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test..... ..... per gal	7	@	7½
Black, 29 gravity, 15 cold test.....	7½	@	8
Black, 29 gravity, summer..	6	@	6½
Cylinder, light, filtered.....	14	@	16
Cylinder, dark, filtered.....	10	@	13
Paraffine, 23¼ @ 24 gravity..	11	@	12
Paraffine, 25 gravity.....	10	@	11
Paraffine, 28 gravity.....	7½	@	8
Paraffine, red.....	9½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton..$22.00		@	24.00
Barytes, Amer. floated....29.00		@	32.00
Barytes, Amer. No. 1.....16.00		@	18.00
Barytes, Amer. No. 2.....13.00		@	15.00
Barytes, Amer. No. 3.....11.00		@	12.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese.....	40	@	50
Blue, Prussian.....	25	@	40
Blue, Ultramarine.....	8	@	25
Brown, Spanish.....	...	@	1
Brown, Vandyke, Amer...	3	@	3½
Brown, Vandyke, English.	6	@	8
Carmine, No. 40, in bulk..	2.75	@	..
Carmine, No. 40, in boxes or barrels.	2.85	@	..
Carmine, No. 40, in ounce bottles.	3.75	@	..
Chalk, in bulk..... ₩ ton..		@	2.25
Chalk, in bbls..₩ 100 ℔...	33	@	40
China Clay, English..... ₩ ton.13.00		@	18.00
Cobalt Oxide, prep'd.....	9.00	@	11.00
Cobalt Oxide, black..... lots 100 ℔.	1.90	@	....
Cobalt Oxide, black..... less 100 ℔.	1.96	@	....
Green, Paris, in bulk.....	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack.	12	@	17
Green, Chrome, ordinary.	6	@	12
Green, Chrome, pure	22	@	25
Lead, Eng., B.B. white....	8½	@	10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔...	7	@	7½
Kegs, lots 500 ℔ to 5 tons....	6¼	@	6¾
Kegs, lots 5 tons to 12 tons..	6¾	@	6¾
Kegs, lots 12 tons and over..	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....	..	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	..	@	2¼
Lead, Red, bbls. and ⅛ bbls...	6	@	7
Lead, Red, kegs.....	6¼	@	7½
Litharge, kegs	6¼	@	7¾
Litharge, bbls. and ⅛ bbls.....	6	@	7

Terms, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle 1.35		@	1⅛
Ocher, French Washed.....	1¼	@	2½
Ocher, German Washed....	1¼	@	3
Ocher, American.....	¼	@	1¾
Orange Mineral, English....	8½	@	9
Orange Mineral, French.....	10	@	10½
Orange Mineral, German....	8½	@	9
Orange Mineral, American.	8¼	@	8¾
Paris White, English Cliff-stone	1.00	@	1.15
Paris White, American.....	65	@	75
Red, Indian, English.....	5½	@	7
Red, Indian, American.....	2	@	6¾
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American... ₩ 100 ℔..1.00		@	1.10
Red, Venetian, English.. ...1.20		@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps.	1½	@	3½
Sienna, Ital., Raw, Powd..	4½	@	5½
Sienna, Ital., Raw, Lumps..	1¾	@	3½
Sienna, American, Raw.....	1½	@	1¾
Sienna, American, Burnt and Powdered ..... ₩ ℔	1½	@	1¾
Talc, French.....	..	@	1¼
Talc, American.....	1¼	@	1¾
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English.....	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered ..... ₩ ℔	3½	@	4
Umber, Turkey Bnt. Lu.....	2¾	@	3
Umber, Turkey, Raw and Powdered	3¼	@	....
Umber, Turkey, R'w Lumps	2¼	@	2¾
Umber, Turkey, Bnt. Amer..	1¼	@	1½
Umber, Turkey, R'w Amer.	1¼	@	1½
Yellow, Chrome.....	10	@	25
Vermillion, American Lead.	11¼	@	12
Vermillion, Quicks'er, bulk..	57	@	..
Vermillion, Quicks'er, bags..	58	@	..
Vermillion, Quicksilver am'r pkgs	62	@	..
Vermillion, English Import.	85	@	90
Vermillion, Imitation, Eng..	8	@	35
Vermillion, Trieste.....	90	@	92½
Vermillion, Chinese.....	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gilders'.....	45	@	55
Zinc, American, dry.... ₩ ℔	4½	@	..
Zinc, French, Red Seal.....	7¼	@	.
Zinc, French, Green Seal	9	@	..
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal....	7½	@	..
Zinc, Antwerp, Green Seal..	7½	@	..
Zinc, German, L. Z. O.....	6½	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10½	@	11½
lots less than one ton.....	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal..	..	@	..
lots of 1 ton and over.....	10	@	10½
lots of less than 1 ton.....	10½	@	10¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort.....	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic.....	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw	7	@	14
Sienna, Burnt.....	7	@	14
Umber, Raw.....	7	@	10
Umber, Burnt.....	7	@	10

Putty—

In barrels and ⅛ bbls.....	.01½	@	.01¾
In tubs	.01¾	@	.02
In tin cans.....	.01¾	@	.02¼
In bladders..	.01¾	@	.02¼

Spirits Turpentine—

In regular bbls.....	34½	@	..
In machine bbls.....	35	@	..

Glue—

Low Grade..... ₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	23
English.....	10	@	15
Irish.....	12	@	..

CURRENT METAL PRICES.

MARCH 29, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
⅜ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in....	₩ ℔ 1.80 @ 1.90¢
Refined Iron:	
⅜ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in.	₩ ℔ 1.90 @ 2.00¢
1 to 6 in. x ¼ and 5-16	₩ ℔ 2.10 @ 2.20¢
Rods—⅜ and 11-16 round and sq.	₩ ℔ 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12	₩ ℔ 2.20 @ 2.30¢
"Burden Best" Iron, base price.	₩ ℔ 3.00¢
Burden's "H. B. & S." Iron, base price	₩ ℔ 2.80¢
"Ulster"	₩ ℔ 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per ℔
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ ℔ 2¾ @	3⅝¢
17 to 20	₩ ℔ 3 @	3⅝¢
21 to 24	₩ ℔ 3¼ @	3⅝¢
25 and 26	₩ ℔ 3⅜ @	3¾¢
27	₩ ℔ 3½ @	3⅞¢
28	₩ ℔ 3⅝ @	4 ¢
American B. B.	₩ ℔ 4¢ @ 4½¢	

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ ℔ 12¢ @ 13¢
Patent Planished	₩ ℔ A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ ℔, 8½¢

Galvanized.

	B. B.
Nos. 10 to 16	₩ ℔ 4.20¢
17 to 22	₩ ℔ 4½¢
23 to 24	₩ ℔ 4¾¢
25 to 26	₩ ℔ 5 ¢
27	₩ ℔ 5¼¢
28	₩ ℔ 5½¢
29 to 30	₩ ℔ 6½¢

English Steel from Store—

Best Cast	₩ ℔ 15 ¢
Extra Cast	₩ ℔ 16½ @ 17 ¢
Swaged, Cast	₩ ℔ 16 ¢
Best Double Shear	₩ ℔ 15 ¢
Blister, 1st quality	₩ ℔ 12 ¢
German Steel, Best	₩ ℔ 10 ¢
2d quality	₩ ℔ 9 ¢
3d quality	₩ ℔ 8 ¢
Sheet Cast Steel, 1st quality	₩ ℔ 15 ¢
2d quality	₩ ℔ 14 ¢
3d quality	₩ ℔ 12½¢
R. Mushet's "Special"	₩ ℔ 48 ¢
" " Annealed	₩ ℔ 75 ¢
" " "Titanic"	₩ ℔ 20 ¢

METALS—

Tin—

	Per ℔
Banca, Pigs	21¾¢
Straits, Pigs	21¾¢
Straits in Bars	23 ¢

Tin Plates—

Duty: 2.2¢ ₩ ℔.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade. IC, 10 x14	@ $6.50
" " " IC, 12 x12	@ 6.75
" " " IC, 14 x20	@ 6.50
" " " IC, 20 x28	@ 13.00
" " " IX, 10 x14	@ 8.50
" " " IX, 12 x12	@ 8.75
" " " IX, 14 x20	@ 8.50
" " " IX, 20 x28	@ 17.00
" " " DC, 12½x17	@ 6.00
" " " DX 12½x17	@ 8.00
Allaway Grade IC, 10 x14	@ 6.00
" " IC, 12 x12	@ 6.25
" " IC, 14 x20	@ 6.00
" " IC, 20 x28	@ 12.00
" " IX, 10 x14	@ 7.50
" " IX, 12 x12	@ 7.75
" " IX, 14 x20	@ 7.50
" " IX, 20 x28	@ 15.00
" " DC, 12½x17	@ 5.50
" " DX, 12½x17	@ 7.00

Coke Plates—Bright—

Steel Coke.—IC, 10 x 14, 14 x 20	@ $5.60
10 x 20	@ 8.50
20 x 28	@ 12.00
IX, 10 x 14, 14 x 20	@ 7.00
BV Grade.—IC, 10 x 14, 14 x 20	@ 5.60

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20	@ $5.65
20 x 28	@ 11.00
IX, 14 x 20	@ 6.40
20 x 28	@ 12.80
Abecarne Grade.—IC, 14 x 20	@ 5.55
20 x 28	@ 10 80
IX 14 x 20	@ 6 40
20 x 28	@ 12.80

Tin Boiler Plates—

IX, 4x 28 112 sheets	@ $13.35
IXX, 14 x 28 112 sheets	@ 14.50
IXX, 14 x 31 112 sheets	@ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX 20 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ ℔. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake	@ 12¼¢
Ansonia grade Arizona	@ 12 ¢
Ansonia grade Casting	@ 11¾¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	..	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	...	...	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	..	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, per pound 22¢

Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ ℔ advance over prices of Sheet Copper required to cut them from.

Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ ℔ advance over prices of Sheet Copper required to cut them from.

Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ ℔ advance over prices of Sheet Copper required to cut them from.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ ℔ over the foregoing prices.

Cold or Hard Rolled Copper lighter than 14 oz. ₩ square foot, 2¢ ₩ ℔ over the foregoing prices.

All Polished Copper over 20 in. wide, 2¢ ₩ ℔ advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per ℔.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ ℔ additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned ₩ ℔ 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ ℔
14 oz.	25¢ ₩ ℔
12 oz.	27¢ ₩ ℔

Seamless Brass Tubes—

July 6, 1892. Net.

O. G.	N. G.	⅜	¼	⅝	½	¾	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ ℔ additional

Brazed Brass Tubing. (To No. 20 inclusive.)

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ ℔
Bronze Tubing, 3¢ ₩ ℔ more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	In. 2	In. 10	In. 12	In. 14	In. 16	In. 18	In. 20	In. 22	In. 24
	10	12	14	16	18	20	22	24	
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33	
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34	
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35	
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36	

Common High Brass: Wider than and including	In. 24 26	In. 26 28	In. 28 30	In. 30 32	In. 32 34	In. 34 36	In. 36 38	In. 38 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.6[illegible]
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.0[illegible]
No. 39	2.00	2.02	.00	...
No. 40	2.60	2.6[illegible]	.60	5.75

— % discount.

Spring Wire, 2¢ ₩ ℔ advance.

Copper Belt and Hose Rivets and Burrs—

	Per ℔.		Per ℔.
No. 5	49¢	No. 11	58¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ ℔
Over 3½ to 5 inches inclusive	18¢ ₩ ℔

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ ℔
Over 3½ to 5 inches inclusive	19¢ ₩ ℔

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 ℔.

Western Spelter	5¢@5¼¢
Bertha (pure)	8¢@8¾¢

Zinc—

Duty: Sheet, 2½¢ ₩ ℔.

600 ℔ casks	6¾¢
Per ℔	7 ¢

Lead—

Duty: Pig, $2 ₩ 100 ℔. Old Lead, 2¢ ₩ ℔. Pipe and Sheets, 2½¢ ₩ ℔.

American Pig	4.2 ¢
Bar	4.2 ¢
Pipe, subject to discount 20%	6¼¢
Tin-Lined Pipe, subject to discount 20%	.15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢

Old Lead in exchange, 3¼¢ ₩ ℔.

Solder—

½ @ ½ (Guaranteed)	13¼¢ @ 15¢
No. 1	11¾¢ @ 12¼¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ ℔ 12 ¢
Hallett's	" 10.4¢@ 0¾¢

Aluminum—

Duty: 15¢ ₩ ℔.

No. 2 grade metal, in ton lots	₩ ℔ .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots	₩ ℔ .90
Lots less than 1 ton	10¢ ₩ ℔ additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ ℔ 9½
Light and Tinned Copper	₩ ℔ 8½
Heavy Brass	₩ ℔ .
Light Brass	₩ ℔ 6 ¢
Lead	₩ ℔ 3¼¢
Tea Lead	₩ ℔ 3¼¢
Zinc	₩ ℔ 2½¢
No. 1 Pewter	₩ ℔ 14 ¢
No. 2 Pewter	₩ ℔ 7 ¢
Wrought Scrap Iron	₩ gross ton $13.00
Heavy Cast Scrap	₩ gross ton 9.00
Stove Plate Scrap	₩ gross ton 6 00
Burnt Iron	₩ gross ton 4.00